

Annual Progress Report (APR)



2021 Air Quality Annual Progress Report (APR)
for East Lothian Council

In fulfilment of Part IV of the Environment Act
1995

Local Air Quality Management

January 2022

East Lothian Council

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Executive Summary: Air Quality in Our Area

Air Quality in East Lothian

East Lothian Council considered the declaration of an Air Quality Management Area (AQMA) for potential exceedance of the Nitrogen dioxide (NO₂) annual mean Air Quality Objective (AQO) after submission of the 2013 Progress Report (Ref 1). In November 2013, following completion of the 2013 Progress Report, an AQMA was declared in Musselburgh (Ref 2) in relation to breaches and likely breaches of the Nitrogen Dioxide annual mean air quality objective. The extent of the AQMA is High Street, Musselburgh (A199) from its junction with Newbigging and extending westwards to the junction with Bridge Street and Mall Avenue.

Following declaration of the AQMA East Lothian Council commissioned a Further Assessment (Ref 3) of Air Quality in Musselburgh. The assessment provided the technical justification for the measures the authority later included in any Air Quality Action Plan (AQAP). The Further Assessment was completed in September 2014 and confirmed the findings of the previous Detailed Assessment in 2012 (Ref 4), namely that there were likely to be continued exceedance's of the annual mean NO₂ objective where relevant exposure exists.

The Further Assessment estimated that ambient Nitrogen oxides (NO_x) reductions in the AQMA of up to 27% at some locations were required in order to achieve compliance with the annual mean NO₂ objective and, furthermore, that a source apportionment exercise indicates that emissions from buses form the largest contribution at all locations along the High Street AQMA. An integrated package of interventions would most likely be required to provide the best NO_x reductions. Measures that reduced overall traffic, reduced queuing and reduced bus numbers, where appropriate, would reduce road NO_x significantly. These measures are however very challenging (both financially and technically) to implement.

The contour plots and dispersion modelling prepared for the Further Assessment indicated that the AQMA boundary included all relevant sources and did not require revocation or amendment at that time.

The 2014 Progress Report (Ref 5) and 2015 Updating & Screening Assessment (Ref 6) confirmed that NO₂ emissions in 2013 and 2014 continued to exceed, or were very close to, the Annual Mean Air Quality Objective for NO₂ at some locations within the AQMA. The 2016 Progress Report (Ref 7) and monitoring results from 2015 indicated that all Air Quality Objectives were complied with and there were no exceedance's of any objectives, including the NO₂ Annual Mean AQO.

East Lothian Council continued to develop and, in February 2017, published an AQAP to outline the measures to be taken to ensure compliance with the Objectives (Ref 8).

However, the 2017 Progress Report (Ref 9) confirmed that during 2016 exceedance's of the NO₂ Annual Mean AQO within the AQMA were again recorded at two locations. There were no other exceedance's of any other AQO noted throughout the County

The 2018 Progress Report (Ref 10) and monitoring results from 2017 indicated that all Air Quality Objectives were complied with and there were no exceedance's of any objectives, including the NO₂ Annual Mean AQO.

The 2019 Progress Report (Ref 11) and monitoring results from 2018 again confirmed no exceedance of any Air Quality Objectives, including within the AQMA.

The 2020 Progress Report (Ref 12) and monitoring results from 2019 confirms there were no exceedance's of any AQO during 2019.

This Report and monitoring results from 2020 confirms there were no exceedance's of any AQO during 2020 with the last exceedance being recorded in 2016.

East Lothian Council will carry out a Detailed Assessment of Air Quality in Musselburgh and the results will be available late summer 2021. If the Detailed Assessment concludes future exceedances of the AQO will be unlikely then East Lothian Council will revoke the AQMA in 2020/21.

A summary of all previous Review and Assessment Reports is provided in Appendix E

Actions to Improve Air Quality

Results of monitoring for the 12-month period from 01/01/20 to 31/12/20 indicate no exceedance's of the NO₂ Annual Mean AQO. East Lothian Council published the Musselburgh Air Quality Action Plan in February 2017. The AQAP outlines 13 short,

medium and longer term measures to be implemented to improve air quality within the AQMA and throughout the County in general.

East Lothian Council are in the process of undertaking a Detailed Assessment of Air Quality in Musselburgh and the results will be available late summer 2021. If the Detailed Assessment concludes future exceedance's of the AQO will be unlikely then East Lothian Council will commence the process of revoking the AQMA.

Local Priorities and Challenges

Some of the mitigation measures outlined in the AQAP continue to be very challenging (both financially and technically) to implement. In particular the development and implementation of the Local Transport Strategy in conjunction with the Local Development Plan will be key to managing air quality. The proposed transport mitigation measures set out in the LDP are anticipated to help improve Air Quality within the Musselburgh AQMA and beyond.

Assessing the impact of the Covid 19 pandemic, particularly upon road traffic use, may be challenging due to a potential lack of public confidence in using public transport aligned with increased working from home and reduced traffic journeys by commuters.

How to Get Involved

Further information on Air Quality within East Lothian, including access to annual air quality reports, can be obtained from the Council's App or website at:

https://www.eastlothian.gov.uk/info/210568/environmental_health/12172/pollution/4

Information on local and national Air Quality, including access to real-time data and maps can be obtained from the Air Quality in Scotland website at:

<http://www.scottishairquality.co.uk>

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1 Local Air Quality Management

This report provides an overview of air quality in East Lothian during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) (Ref 13) and the relevant Policy (Ref14) and Technical Guidance (Ref 15) documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) summarises the work being undertaken by East Lothian Council to improve air quality and any progress that has been made.

Table 1.1 – Summary of Air Quality Objectives in Scotland

| Pollutant | Air Quality Objective Concentration | Air Quality Objective Measured as | Date to be Achieved by |
|---|--|-----------------------------------|------------------------|
| Nitrogen dioxide (NO ₂) | 200 µg/m ³ not to be exceeded more than 18 times a year | 1-hour mean | 31.12.2005 |
| Nitrogen dioxide (NO ₂) | 40 µg/m ³ | Annual mean | 31.12.2005 |
| Particulate Matter (PM ₁₀) | 50 µg/m ³ , not to be exceeded more than 7 times a year | 24-hour mean | 31.12.2010 |
| Particulate Matter (PM ₁₀) | 18 µg/m ³ | Annual mean | 31.12.2010 |
| Particulate Matter (PM _{2.5}) | 10 µg/m ³ | Annual mean | 31.12.2020 |
| Sulphur dioxide (SO ₂) | 350 µg/m ³ , not to be exceeded more than 24 times a year | 1-hour mean | 31.12.2004 |
| Sulphur dioxide (SO ₂) | 125 µg/m ³ , not to be exceeded more than 3 times a year | 24-hour mean | 31.12.2004 |
| Sulphur dioxide (SO ₂) | 266 µg/m ³ , not to be exceeded more than 35 times a year | 15-minute mean | 31.12.2005 |
| Benzene | 3.25 µg/m ³ | Running annual mean | 31.12.2010 |
| 1,3 Butadiene | 2.25 µg/m ³ | Running annual mean | 31.12.2003 |
| Carbon Monoxide | 10.0 mg/m ³ | Running 8-Hour mean | 31.12.2003 |

2 Actions to Improve Air Quality

Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12 months, setting out measures it intends to put in place in pursuit of the objectives.

A summary of AQMAs declared by East Lothian Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=368

Table 2.1 – Declared Air Quality Management Areas

| AQMA Name | Pollutants and Air Quality Objectives | City / Town | Description | Action Plan |
|--------------------------|---------------------------------------|-------------|--|---|
| High Street, Musselburgh | NO2 annual mean | Musselburgh | High Street, Musselburgh (A199) from its junction with Newbigging and extending westwards to the junction with Bridge Street and Mall Avenue | https://www.eastlothian.gov.uk/downloads/file/23473/air_quality_action_plan_2017 |

Cleaner Air for Scotland

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) (Ref 16) is a national cross-government strategy that sets out how the Scottish Government and its partner organisations propose to reduce air pollution further to protect human health and fulfil Scotland's legal responsibilities as soon as possible. A series of actions across a range of policy areas are outlined, a summary of which is available on [the Scottish Government's website](#). Progress by East Lothian Council against relevant actions within this strategy is demonstrated below.

2.1.1 Transport – Avoiding Travel – T1

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan. The Local Transport Strategy (LTS) (Ref 17) and associated action plans were adopted by Council on 30th October 2018. The Active Travel Improvement Plan (ATIP) for East Lothian, an associated plan of the LTS was reviewed and recommended to Council. Through Smarter Choices Smarter Places, the Council also employed a Behavioural Change Officer to encourage alternative transport modes in particular active travel. An initiative 'Beat the Streets' to encourage greater walking and cycling also ran between 2019-2020 through intelligent health with Musselburgh Area Partnership.

A draft ELC Travel Plan was prepared summer 2020 but due to the impacts of Covid, in particular potential employer home working policy changes and the uncertainty of demand, reasonable target setting and mitigations are difficult to calculate. The original draft Travel plan set targets to encourage sustainable transport options driving down single occupancy car use, which now is significant different from what was previously forecast. Confidence in public transport has significantly deteriorated and with lockdown relaxing high vehicle trips are being experienced. This is a challenging situation, but more data and trend analysis is needed to fully understand the longer term implications of the pandemic and our ability to influence behaviour. This will start to change and evolve over the next 12 months

2.1.2 Climate Change – Effective co-ordination of climate change and air quality policies to deliver co-benefits – CC2

Scottish Government expects any Scottish local authority which has or is currently developing a Sustainable Energy Action Plan to ensure that air quality considerations are covered.

East Lothian Council's Climate Change Strategy 2020–2025 (Ref 18) was approved by Cabinet in January 2020. The Climate Change Strategy sets out the Council's commitment to tackling the Climate Emergency at a local level and sets out the vision and overall aims for a 'Net Zero Council' and a 'Carbon Neutral East Lothian' with specific outcomes, key priority areas and actions over the next five years towards achieving these overall aims. The strategy was developed with an extensive consultation process, including input from the Council's Climate Change Planning & Monitoring Group (which includes the Senior

Environmental Health & Public Protection Officer with responsibility for Air Quality Management) and two rounds of public consultation. This included public drop-in consultation events, which were also an opportunity for awareness-raising and engagement on ways to reduce carbon emissions and promote a more sustainable lifestyle.

One of the key Outcomes set out in the Council's Climate Change Strategy is: "Active Travel and Sustainable Transport are used for everyday journeys, to drastically cut emissions from transport and improve air quality", with the ambition and targets to: "Ensure that East Lothian has well-connected, healthy, active communities with improved air quality, where active travel and sustainable transport modes are the norm to access local services and amenities". This Outcome includes the specific Key Priority Area of "Improving Air Quality".

During the 5 years of this Climate Change Strategy the Council has committed to progressing the following actions to achieve these aims:

- Continue to improve air quality in Musselburgh's Air Quality Management Area with traffic management solutions, active travel and public transport improvements, increased access to electric vehicle charging points and public awareness-raising campaigns;
- Investigate collaborative working with City of Edinburgh Council to identify solutions to tackle traffic congestion and air quality in Musselburgh;
- Reduce exposure to poor air quality through urban placemaking, including appropriate green network solutions such as hedges / use of landscaping to buffer emitting development;
- Explore innovative technological solutions to improve urban Air Quality
- Continue to support the work of the East Central Scotland Vehicle Emissions Partnership to promote and raise awareness of air quality, particularly around our schools, and to deter idling vehicles;
- Promote implications for long-term health and wellbeing, contribution to Placemaking, reducing social isolation and reducing inequalities through reduced reliance on cars;
- Take air quality into account in assessing development proposals, and encourage developers to design for improved air quality.

The Climate Change Strategy also promotes active travel (walking/cycling) and sustainable transport (e.g. electric vehicles; taking the bus or train), particularly for shorter journeys. The strategy aims to encourage behaviour change towards active and sustainable travel, which will help to reduce traffic-related air pollution (as well as wider benefits including contributing to reducing the carbon emissions that cause global warming, and improving health, wellbeing and physical activity levels)

2.1.3 EV Infrastructure

Over the last 4 years East Lothian Council have upgraded older Electric Vehicle (EV) charging units and increased the number of public charge points in East Lothian to over 103, concentrating on creating hubs in town centres and ensuring that we have a strategic network of sites. We have also added public charge points in residential areas where people do not have driveways (and therefore no option for charging at home) and in long-stay car parks in Haddington, Longniddry and Wallyford. East Lothian Council are also developing policies to require developers to provide appropriate charging infrastructure alongside new housing and on retail and industrial sites, and are working to ensure charge points are integrated into our own developments e.g. school extensions, and social housing.

Progress and Impacts of Measures to address Air Quality in East Lothian

East Lothian Council is committed to expanding the EV infrastructure and hope to increase public EV charge points by a further 60 by 2023. This will be dependent on external grant funding being available, and secured.

East Lothian Council has taken forward a number of measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. More detail on these measures can be found in the air quality Action Plan relating to each AQMA.

Key completed measures are:

- **Improving Links with Local Transport Strategy (Measure No 1)** – The development of the Local Transport Strategy was deferred because of the delay in determining the exact nature of the interventions associated with the LDP. To

identify these interventions SIAS were commissioned to build a micro-simulation (S-paramics) model of the strategic and local road network to form a 2012 base and predict cumulative traffic impacts on the strategic and local road network having regard to future development of the preferred sites identified in the LDP. The micro-simulation traffic modelling work is now complete and ELC consulted on the LTS in conjunction with its Strategic environmental assessment. The Local Transport Strategy (LTS) and associated action plans were adopted by Council on 30th October 2018. The Active Travel Improvement Plan (ATIP) for East Lothian, an associated plan of the LTS, will be reviewed and recommended to Council later this year.

East Lothian Council engaged Consultants to look at the 'case for change' to review current transport problems and opportunities and look to identify appropriate solutions to improve transport systems. This is a wide ranging review and will consider the existing and proposed transport interventions identified within the current Local development plan, evaluate the growth agenda and external considerations, which may re-determine some transport mitigation.

The East Lothian Access Study case for change was made February 2020, with work now progressing on Part 1 –initial appraisal concluding Autumn 2021.

Discussions are ongoing with Transport Scotland for Part 1 high level interventions to be included in the Scottish Transport Project Review (STPR2) running parallel. Separate, but intricately linked, work to develop models to inform LDP2 evidence report has started and will be available by the end of the year. In association, testing of timeframe, and sequencing when LDP1 interventions is also ongoing to understand the changing demand and when adaptation of the road network are necessary.

- **Improving Links with Local Development Plan (Measure No 2)** - The East Lothian Local Development Plan 2018 (Ref 19) was adopted on 27th September 2018. The Local Development Plan 2018 used a compact spatial strategy to allocate land for over 10,000 new homes and land for new employment in East Lothian. This primarily involved the expansion of existing settlements in order to deliver the level of growth as sustainably as possible. Where possible, existing infrastructure such as transport, utilities and education facilities were upgraded to accommodate this growth. In some areas new infrastructure was required. The

majority of these new homes and infrastructure are either completed, are under construction, or have live planning consents.

Policies in the LDP 2018 set out how new development must contribute towards sustainable growth, and how the social, economic and environmental impacts are managed. In relation to air quality and environmental impacts, policy NH12 is used to manage the effects of new development, and sets out when an Air Quality Assessment would be required in support of a proposal. Policies relating to development location and transport impact (T1 and T2) as well as design policies (DP2, DP3 and DP4) assist with decision making on new development proposals and their impacts upon air quality.

Supplementary Guidance (SG) provides more detailed and location specific measures on how the LDP 2018 strategies would be delivered and how policies would be applied. This included the Town Centre Strategies SG which seeks to encourage less vehicle use within town centres, more public transport use, and more walking and cycling, all of which contribute to better air quality. The Developer Contributions Framework SG set out the type of contributions that developers would be required to provide as part of new development in order to ensure both residential only sites and mixed-use sites have access to facilities. This reduces the need to travel therefore reducing environmental impacts and improving air quality.

Supplementary Planning Guidance further expands upon specific policy areas or strategies of the LDP 2018. This includes the Green Network Strategy SPG which provides guidance on how to connect parts of East Lothian via walking and cycling routes, reducing car travel and emissions. The Design Standards for New Housing Areas SPG places the movement and experiences of people at the top of the design agenda, and sets out criteria for designing new development to provide easy walking routes, access to open space, improving health and wellbeing through better air quality, reducing levels of noise, and managing the effects of climate change. It also encourages electric vehicle charging in new developments to reduce carbon emissions.

East Lothian has one air quality management area (AQMA) which is Musselburgh High Street. This, together with other parts of the county, are continually monitored. The LDP 2018 contains proposals (PROP T19, T20 and T21) setting

out a range of improvements to improve air quality in this AQMA. The annual air quality progress report provides the latest figures and shows how Musselburgh High Street and other areas are performing. The results of this report are used to inform policy planning. Following the introduction of the Planning (Scotland) Act 2019 (Ref 20), work has now been started by the Scottish Government on preparing the National Planning Framework 4. This will be part of the development plan and include national policy. East Lothian has started the early stages of reviewing the LDP 2018 and preparing the next LDP under the new development planning system set out in the 2019 Act. The first stage of the LDP process will be the production of an Evidence Report which will then lead to a draft LDP2. The Evidence Report must contain information on the issues set out in the 2019 Act. Preparation will begin with research and information gathering including a review of what the LDP 2018 policies have achieved in relation to air quality. East Lothian has grown quite significantly in the last 5-10 years, and it is important to establish a baseline in terms of the social, economic and environmental position to look to the future and what changes could be introduced to further improve the area. For the Evidence Report, the Council will look at areas that may be constrained in terms of air quality, what could be done to improve areas that are not performing as well, and how to continue to protect areas that are. An overall strategy will emerge from the information gathered and engagement undertaken. Once the Evidence Report has passed the gate check procedure, LDP2 can be prepared. The LDP2 will then set out a clear long-term direction in terms of growth, investment and change. LDP2 will contain the policies and proposals required to deliver and achieve the strategy set out in the Evidence Report.

East Lothian contributed towards the preparation of an Indicative Regional Spatial Strategy (RSS). The RSS is a high level strategic planning document prepared jointly for regions of Scotland. East Lothian remains in the defined south east region, and jointly contributed towards the RSS with other authorities (Edinburgh, Midlothian, West Lothian and Fife).

The Regional Spatial Strategy will provide a long-term strategic approach to planning across south east Scotland. It will focus on environmental and climate issues primarily and how to continue to support south east Scotland in terms of

sustainable growth. Air quality is linked closely with various aspects of spatial planning including health, transport, employment, construction and materials.

East Lothian Council will continue to work both at the local and regional levels of development planning to continually improve air quality in the short and longer term, and will work closely with the public, landowners, businesses, and regulatory bodies on effective strategies to support this on small and large scale projects and development proposals.

- **Bus Stop Relocations on High Street, Musselburgh (Measure No 3)** –The local network Musselburgh town centre mitigations tested within the Musselburgh and Tranent Traffic Model (MTTM) for the High Street are:
 - Adjusting the eastbound lane arrangement for Mall Avenue at the A199 High Street/ Bridge Street junction.
 - Consolidation of pedestrian crossings between Bridge Street and Kilwinning Street.
 - Moving westbound bus lay-by into car parking spaces and further back from the Bridge Street junction to remove the traffic obstruction on the High Street.
 - Extending the eastbound bus lay-by to remove bus dwell obstruction on the High Street before Shorthope Street
 - Adding a bus lay-by westbound on the A199 Linkfield road opposite Loretto School
 - A right turn on the High Street for Kilwinning street.

The timing of these measures is currently unknown but will include new signalised junctions and re-signalisation of junctions. Following an initial consultation in 2018 to examine options to future proof Musselburgh's infrastructure for sustainable modes of travel, East Lothian Council instructed AECOM to undertake phase 2 of the project to develop visualisations to test public acceptability and encourage engagement. It is anticipate further consultation will commence late autumn. To progress scheme development, East Lothian Council has bid into Sustrans paths for everyone and hope to receive confirmation that the bid has been successful shortly. The project plan will look to deliver comprehensive re-allocation

of street space over a 5 year period, subject to funding. Further feasibility and preliminary design work is being carried out now.

Work has been undertaken through the Bus Priority rapid deployment fund in response to Covid to increase patronage, reliability and speed up services. In Musselburgh the bus stops on the High Street have been split to avoid bus queuing and unnecessary delays. As advised above, additional funding has been received to investigate additional measures to improve bus journey times. These measures with the ongoing, Musselburgh Active Town are designed to improve pedestrian accessibility, access and active and sustainable transport.

- **Enforcement of idling provisions of the Road Traffic (Vehicle Emission) (Fixed Penalty) (Scotland) Regulations 2003 (Measure No 4)** - East Lothian Council Road Services are in discussions with NSL Ltd, who provide the Parking Attendant Service within the County, and are exploring the technicalities of them taking on this role. To alleviate the effect of indiscriminate parking at the eastbound bus stop on the High Street during peak hour traffic, a parking attendant has been instructed to monitor and take appropriate action to keep traffic moving.
- **Eco Stars Fleet Recognition Scheme (Measure No 6)** – East Lothian Council secured funding from the Scottish Government and, in February 2017, formally launched an Eco Stars Fleet Recognition Scheme within East Lothian. The scheme provides recognition for best operational practices and guidance for making improvements to fleet operators with the ultimate aim of reducing fuel consumption and reduced emissions. The Council's own fleet, together with Commercial Fleet Operators will be encouraged to engage with the scheme which will have a positive impact on emissions, including within the AQMA in Musselburgh High Street. East Lothian Council are members of the scheme and are proud to have been awarded a 5 Star rating. The scheme had 59 members in 2017, 100 members in 2018, 136 members in 2019, 165 members in 2020 and, as at June 2021, now has 207 members incorporating 7498 vehicles. Funding has been secured from the Scottish Government to allow the scheme to continue to operate and expand through 2021/22.
- **SCOOT Traffic Management System (Measure No 7)** – Funding remains in place to upgrade the SCOOT system and integrate new signalised junctions into the system. A 5-year project to future proof Musselburgh infrastructure for sustainable

modes is underway. East Lothian Council have applied for funding with Sustrans, a UK Sustainable Transport Charity, to develop this project. This project will examine the performance of all transport networks to accommodate significant modal shift to active travel. A review of all SCOOT arrangements will be considered in the context of this work. No material change. Further feasibility and preliminary design work being carried out now. Application to the Bus Partnership fund has secured £3.3m over the next 2-3 year through Edinburgh South East Scotland City Region Deal to introduce bus journey time improvements. This combined with the above interventions will examine potential UTC and AVL technologies to prioritise public transport.

- **AQMA Signage (Measure No 9)** – East Lothian Council commissioned a City Tree within the AQMA in Musselburgh during late Summer of 2018. As well as providing the locus for the Tree, the structure also contains signage and information on Air Quality. The tree had to be removed in Autumn 2019 due to problems with the irrigation system.
- **The East Central Scotland Vehicle Emissions Partnership (Measure No 10)** – East Lothian Council works in partnership with Midlothian, West Lothian, Falkirk and, since 2019, Stirling Councils with a common aim of raising awareness of vehicle emissions and impacts on air quality amongst the general public. The partnership also investigates complaints of idling and provides an educational element to increasing awareness of air quality impacts from road traffic. Further information on the work of the Partnership can be obtained at the following link: <http://switchoffandbreathe.org/about/>
- **Provision of Information regarding Air Quality and Travel Options (Measure No 13)** – Information on Air Quality within East Lothian, including access to annual air quality reports, can be obtained from the Council's App or website at: https://www.eastlothian.gov.uk/info/210568/environmental_health/12172/pollution/4

Progress on the following measures has been slower than expected due to lack of commitment from stakeholders or need for issue to be considered as part of a regional strategy:

- **Electrification of Lothian Buses in Musselburgh (Measure No 5)** – Due to a lack of commitment from relevant stakeholders regarding funding this project may not be taken forward. Other funding avenues are being explored.

- **Longer Trains and platforms at Musselburgh Rail Station (Measure No 8)** – Developer contributions are being collected through the planning process and individual agreements entered into with Network Rail. Longer platforms are required because longer train sets are needed to accommodate the predicted increased patronage. The platforms are only needed close to full build out of all committed and LDP allocations. It is unlikely this will be delivered until CP7. (2024-2029) Further work is being undertaken through the STAG (Scottish Transport Appraisal Group) East Lothian Access strategy working with Transport Scotland rail branch and Network rail to increase capacity on the ECML and North Berwick branch line. This intervention is being considered as part of the wider STAG appraisal working ongoing at this time.
- **Development of Green Travel Plans (Measure No 11) and Promotion of Cycling and Walking (Measure 12)** – The Smarter Choices, Smarter Places (SCSP) Programme is a Paths for All grant scheme to support behaviour change initiatives to increase active and sustainable travel. The programme is funded through Transport Scotland (Sustainable Transport team) and aims to make walking and cycling a mode of choice for short local journeys in our towns, cities and villages. It also encourages other forms of sustainable choices such as public transport use and car share. This will help to cut Scotland’s carbon emissions and improve our air quality. It will help reverse the trend towards sedentary lifestyles and will tackle health inequalities. ELC receives funding through the scheme and in 2019/20 will engage a behavioural change officer to work with communities, groups and organisations to encourage greener, more active travel options. The Council also bid to run a ‘beat the streets’ game to foster greater belief in walking and cycling through community participation interacting in a socially interactive game. The beat the streets project has concluded. A final report is being prepared to inform readers of the level of success achieved and legacy projects. Due to the impact of covid, the report was not formally registered or recognised as a successful trial. Further consideration will be given to continuation of the programme in other Area partnerships at a later date. A i-bike officer and improved messaging on active sustainable travel options is being prepared. A part-time i-bike officer has been employed through Smarter choices smarter places fund. Engagement with schools is ongoing.

Table 2.2 – Progress on Measures to Improve Air Quality

| Measure No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Key Performance Indicator | Target Pollution Reduction in the AQMA | Progress to Date | Estimated Completion Date | Comments |
|-------------|---|---------------------------------------|-------|-------------------|----------------|----------------------|---------------------------|--|--|---------------------------|----------|
| 1 | Improving Links with Local Transport Strategy | Transport planning and infrastructure | | ELC Road Services | | | | | The East Lothian Access Study case for change was made February 2020, with work now progressing on Part 1 –initial appraisal concluding Autumn 2021. Discussions are ongoing with Transport Scotland for Part 1 high level interventions to be included in the Scottish Transport Project Review (STPR2) running parallel. Separate, but intricately linked, work to develop models to inform LDP2 evidence report has started and will be available by the end of the year. In association, testing of timeframe, and sequencing when LDP1 interventions is also ongoing to understand the changing demand and when adaptation of the road network are necessary. | Completed Oct 2018 | |

| Measure No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Key Performance Indicator | Target Pollution Reduction in the AQMA | Progress to Date | Estimated Completion Date | Comments |
|-------------|---|---|---|----------------------|----------------|----------------------|---------------------------|--|--|---------------------------|----------|
| 2 | Improving Links with Local Development Plan | Policy Guidance and Development Control | The proposed LDP contains transport mitigation measures that are intended to manage through traffic within Musselburgh town centre, including within the AQMA. Future traffic growth is anticipated to arise as a result of growth from existing users of the transport network and form committed developments (i.e. development that already has planning permission) as well as from new planned and uncommitted development across East Lothian. The proposed transport mitigation measures set out in the LDP are anticipated to help improve Air Quality within the Musselburgh AQMA. | ELC Planning Service | | | | | Following the introduction of the Planning (Scotland) Act 2019, work has now been started by the Scottish Government on preparing the National Planning Framework 4. This will be part of the development plan and include national policy. East Lothian has started the early stages of reviewing the LDP 2018 and preparing the next LDP under the new development planning system set out in the 2019 Act. As part of this, results from ongoing monitoring of air quality will be used to identify whether there have been any changes that would need to be considered as part of future strategies for the forthcoming LDP2. | Completed Sep 2018 | Ongoing |

| Measure No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Key Performance Indicator | Target Pollution Reduction in the AQMA | Progress to Date | Estimated Completion Date | Comments |
|-------------|--|--------------------|---|-------------------|----------------|----------------------|---------------------------|--|---|---------------------------|----------|
| 3 | Bus Stop Relocations on High Street, Musselburgh | Traffic Management | To improve the flow of traffic within the AQMA and reduce congestion. | ELC Road Services | | | | | Work has been undertaken through the Bus Priority rapid deployment fund in response to Covid to increase patronage, reliability and speed up services. In Musselburgh the bus stops on the High Street have been split to avoid bus queuing and unnecessary delays. As advised above, additional funding has been received to investigate additional measures to improve bus journey times. These measures with the ongoing, Musselburgh Active Toun are designed to improve pedestrian accessibility, access and active and sustainable transport. | Ongoing | |

| Measure No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Key Performance Indicator | Target Pollution Reduction in the AQMA | Progress to Date | Estimated Completion Date | Comments |
|-------------|---|----------------------------------|---|---------------------------------------|----------------|----------------------|---------------------------|--|--|---------------------------|----------|
| 4 | Enforcement of idling provisions of the Road Traffic (Vehicle Emission) (Fixed Penalty) (Scotland) Regulations 2003 | Traffic Management | Prevention of unnecessary pollution from stationary vehicles within the AQMA. | ELC Road Services | | | | | East Lothian Council Road Services are in discussions with NSL Ltd, who provide the Parking Attendant Service within the County, and are exploring the technicalities of them taking on this role. To alleviate the effect of indiscriminate parking at the eastbound bus stop on the High Street during peak hour traffic, a parking attendant has been instructed to monitor and take appropriate action to keep traffic moving. | Ongoing | |
| 5 | Electrification of Lothian Buses in Musselburgh | Promoting Low Emission Transport | Minimisation of pollution within AQMA by providing electric charging facility to allow buses to switch to electric operation. | ELC Transport Services, Lothian Buses | | | | | Due to a lack of commitment from relevant stakeholders regarding funding this project may not be taken forward. Other funding avenues are being explored. | Unknown | |

| Measure No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Key Performance Indicator | Target Pollution Reduction in the AQMA | Progress to Date | Estimated Completion Date | Comments |
|-------------|------------------------------------|--------------------------|--|----------------|----------------|----------------------|---------------------------|--|--|---------------------------|----------|
| 6 | Eco Stars Fleet Recognition Scheme | Vehicle Fleet Efficiency | The scheme provides recognition for best operational practices and guidance for making improvements to fleet operators with the ultimate aim of reducing fuel consumption and reduced emissions. | ELC Env Health | | | | | East Lothian Council formally launched an Eco Stars Fleet Recognition Scheme within East Lothian in February 2017. The scheme provides recognition for best operational practices and guidance for making improvements to fleet operators with the ultimate aim of reducing fuel consumption and reduced emissions. The Council's own fleet, together with Commercial Fleet Operators will be encouraged to engage with the scheme which will have a positive impact on emissions, including within the AQMA in. East Lothian Council are members of the scheme and are proud to have been awarded a 5 star rating. The scheme had 59 members in 2017, 100 members in 2018, 136 members in 2019, 165 members in 2020 and, as of June 2021, now has 207 members incorporating 7498 vehicles. Funding has been secured from the Scottish Government to allow the scheme to continue to operate and expand through 2020/21. | Established Feb 2017 | Ongoing |

| Measure No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Key Performance Indicator | Target Pollution Reduction in the AQMA | Progress to Date | Estimated Completion Date | Comments |
|-------------|---|---------------------------------------|---|-------------------|----------------|----------------------|---------------------------|--|--|--|----------|
| 7 | SCOOT Traffic Management System | Traffic Management | SCOOT is a system of Urban Traffic Control and monitors queue lengths at all junctions on the main arterial routes and alters signal timing to suit. This is monitored every 120 seconds and although monitored by East Lothian Council is controlled by the City of Edinburgh Council through their Traffic Control Room | ELC Road Services | | | | | A review of all SCOOT arrangements will be considered in the context of this work. No material change. Further feasibility and preliminary design work being carried out now. Application to the Bus Partnership fund has secured £3.3m over the next 2-3 year through Edinburgh South East Scotland City Region Deal to introduce bus journey time improvements. This combined with the above interventions will examine potential UTC and AVL technologies to prioritise public transport. | Ongoing | |
| 8 | Longer Trains and platforms at Musselburgh Rail Station | Transport planning and infrastructure | Provision of infrastructure to provide alternative mode of transport | ELC Road Services | | | | | | It is unlikely this will be delivered until CP7. (2024-2029) | |

| Measure No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Key Performance Indicator | Target Pollution Reduction in the AQMA | Progress to Date | Estimated Completion Date | Comments |
|-------------|---|--------------------|---|--|----------------|----------------------|---------------------------|--|---|---------------------------|----------|
| 9 | AQMA Signage | Public Information | Increase awareness of Air Quality | ELC Env Health | | | | | East Lothian Council commissioned a City Tree within the AQMA in Musselburgh during late Summer of 2018. As well as providing the locus for the Tree, the structure also contains signage and information on Air Quality. The tree had to be removed in Autumn 2019 due to problems with the irrigation system. | Completed Sep 2018 | Ongoing |
| 10 | The East Central Scotland Vehicle Emissions Partnership | Public Information | East Lothian Council work in partnership with Midlothian, West Lothian and Falkirk Councils aimed at raising awareness of vehicle emissions and impacts on air quality amongst the general public. The partnership also investigates complaints of idling and provides an educational element to increasing awareness of air quality impacts from road traffic. | Vehicle Emissions Officer, East Central Scotland Vehicle Emissions Partnership at West Lothian Council | | 2003 | | | The partnership has secured funding to continue through 2021/22 and was expanded further when Stirling Council became a partner authority in 2019. | Completed 2003 | Ongoing |

| Measure No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Key Performance Indicator | Target Pollution Reduction in the AQMA | Progress to Date | Estimated Completion Date | Comments |
|-------------|-----------------------------------|-------------------------------|---|-------------------|----------------|----------------------|---------------------------|--|---|---------------------------|----------|
| 11 | Development of Green Travel Plans | Promoting Travel Alternatives | The Smarter Choices, Smarter Places (SCSP) Programme is a Paths for All grant scheme to support behaviour change initiatives to increase active and sustainable travel. The programme is funded through Transport Scotland (Sustainable Transport team) and aims to make walking and cycling a mode of choice for short local journeys in our towns, cities and villages. It also encourages other forms of sustainable choices such as public transport use and car share. This will help to cut Scotland's carbon emissions and improve our air quality. It will help reverse the trend towards sedentary lifestyles and will tackle health inequalities. | ELC Road Services | | | | | The beat the streets project has concluded. A final report is being prepared to inform readers of the level of success achieved and legacy projects. Due to the impact of covid, the report was not formally registered or recognised as a successful trial. Further consideration will be given to continuation of the programme in other Area partnerships at a later date. A i-bike officer and improved messaging on active sustainable travel options is being prepared. A part-time i-bike officer has been employed through Smarter choices smarter places fund. Engagement with schools is ongoing. | Ongoing | |

| Measure No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Key Performance Indicator | Target Pollution Reduction in the AQMA | Progress to Date | Estimated Completion Date | Comments |
|-------------|---|-------------------------------|---|-------------------------------------|----------------|----------------------|---------------------------|--|---|---------------------------|----------|
| 12 | Promotion of cycling and walking | Promoting Travel Alternatives | The Smarter Choices, Smarter Places (SCSP) Programme is a Paths for All grant scheme to support behaviour change initiatives to increase active and sustainable travel. The programme is funded through Transport Scotland (Sustainable Transport team) and aims to make walking and cycling a mode of choice for short local journeys in our towns, cities and villages. It also encourages other forms of sustainable choices such as public transport use and car share. This will help to cut Scotland's carbon emissions and improve our air quality. It will help reverse the trend towards sedentary lifestyles and will tackle health inequalities. | ELC Road Services | | | | | The beat the streets project has concluded. A final report is being prepared to inform readers of the level of success achieved and legacy projects. Due to the impact of covid, the report was not formally registered or recognised as a successful trial. Further consideration will be given to continuation of the programme in other Area partnerships at a later date. A i-bike officer and improved messaging on active sustainable travel options is being prepared. A part-time i-bike officer has been employed through Smarter choices smarter places fund. Engagement with schools is ongoing. | Ongoing | |
| 13 | Provision of Information regarding Air Quality and Travel Options | Public Information | Increase awareness of Air Quality and alternative modes of transport and travel options | ELC Env Health ELC Road Services | | | | | Information on Air Quality within East Lothian, including access to annual air quality reports, can be obtained from the Councils website at: https://www.eastlothian.gov.uk/info/210568/environmental_health/12172/pollution/4 | Completed 2008 | Ongoing |

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how local concentrations of the main air pollutants compare with the objectives.

East Lothian Council undertook automatic (continuous) monitoring at 2 sites during 2020. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at <http://www.scottishairquality.co.uk/>

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

East Lothian Council undertook non- automatic (passive) monitoring of NO₂ at 25 sites during 2020. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for annualisation and bias. Further details on adjustments are provided in Appendix C.

3.1.3 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. Figures 1, 2 and 3 below show the trends for diffusion tubes located within the AQMA on Musselburgh High Street, for tubes located elsewhere in Musselburgh and also throughout the county between 2016-2020.

There have been no exceedances of the Annual Mean NO₂ Objective recorded at any locations, including those locations within the AQMA since 2016. Details of ratified data for the automatic monitor for 2020 are provided in Appendix C.

It can be seen that there has been a general downward trend in annual mean NO₂ concentrations from 2016 - 2020 throughout the County, especially since the start of the Covid 19 pandemic and subsequent lockdown in March 2019 when non-essential travel was restricted.

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year. There were no exceedances of the hourly mean air quality objective in 2020.

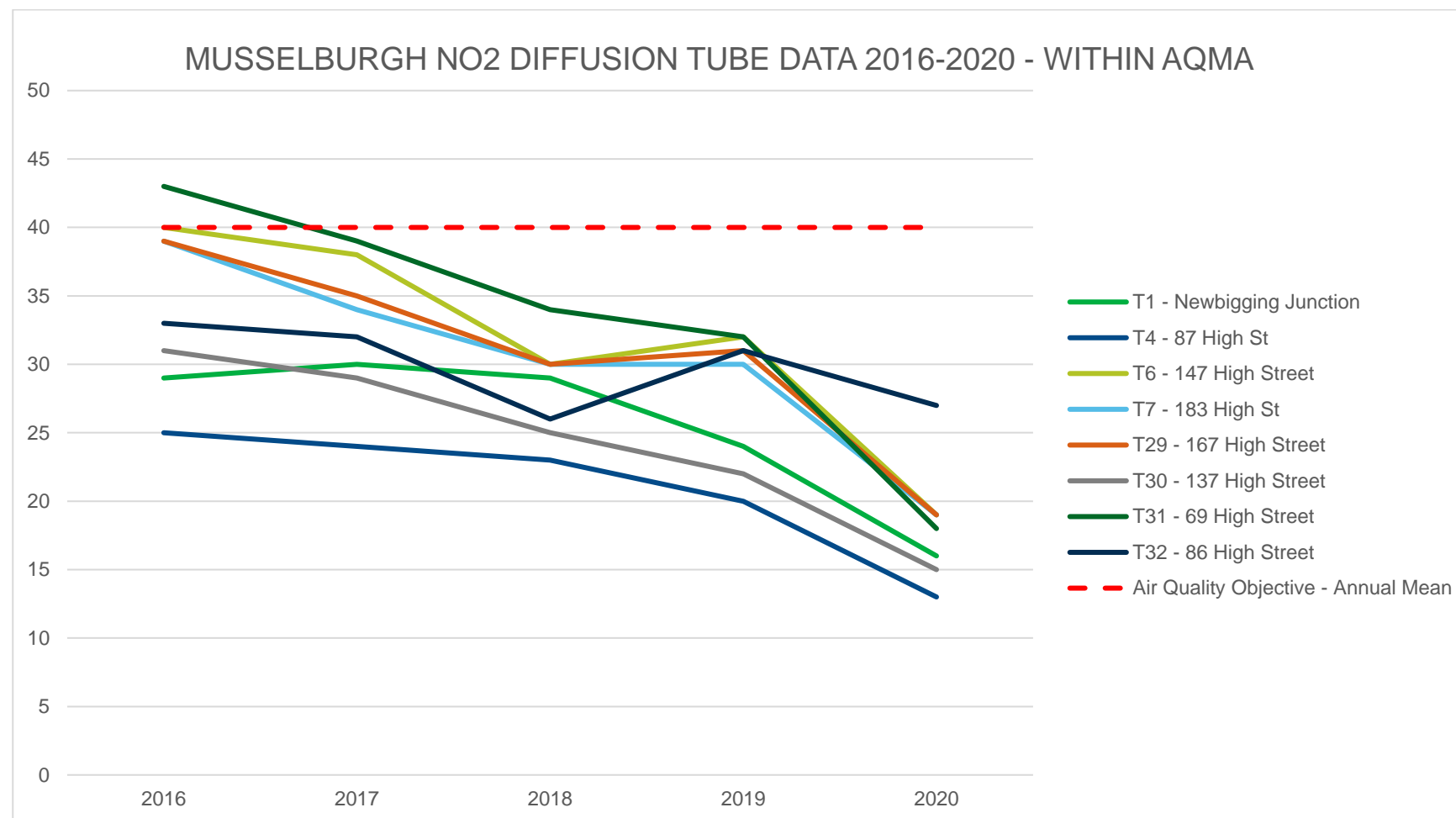
Figure 1: Diffusion Tubes in Musselburgh within AQMA 2016-2020

Figure 2: Diffusion Tubes in Musselburgh outside AQMA 2016-2020

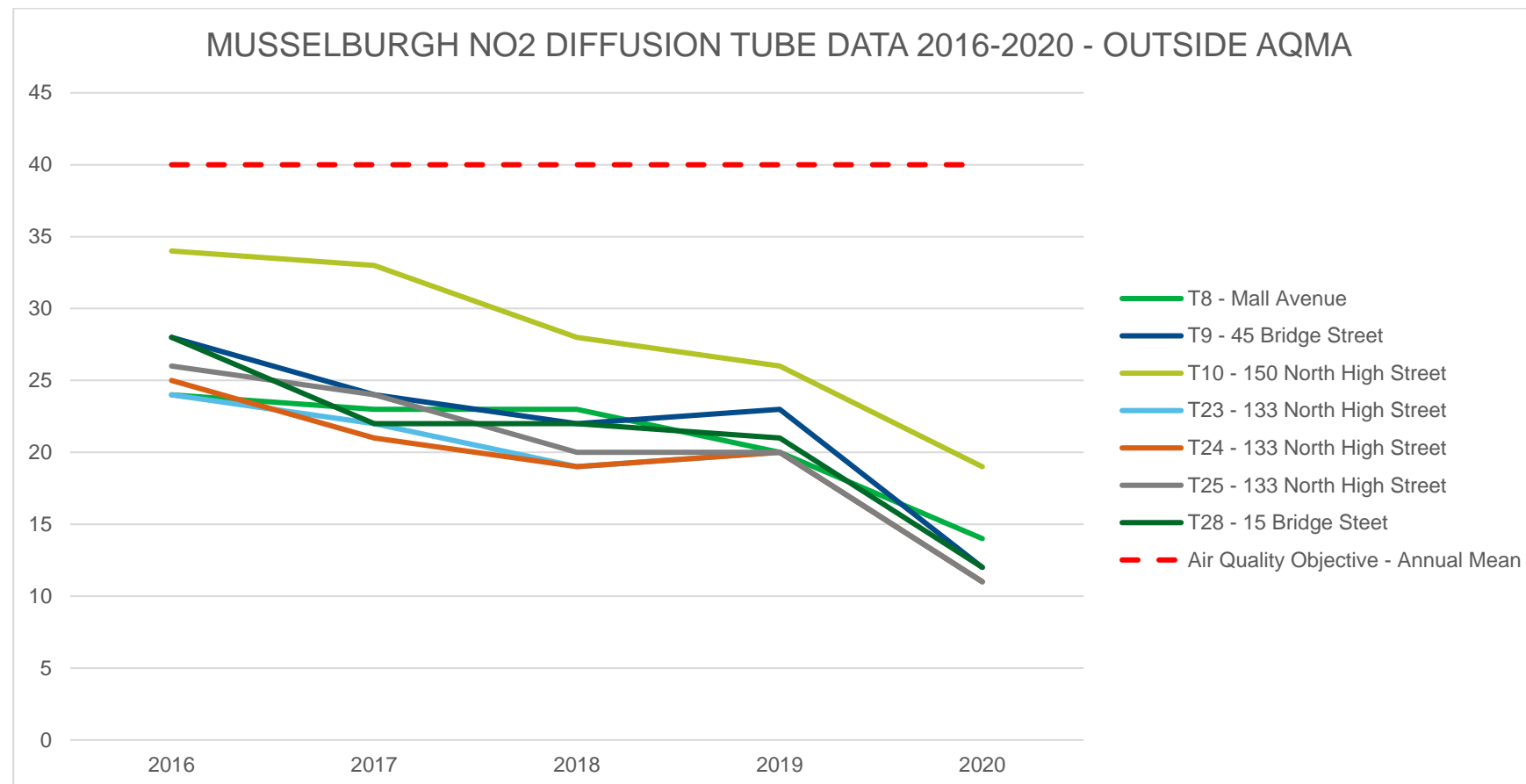
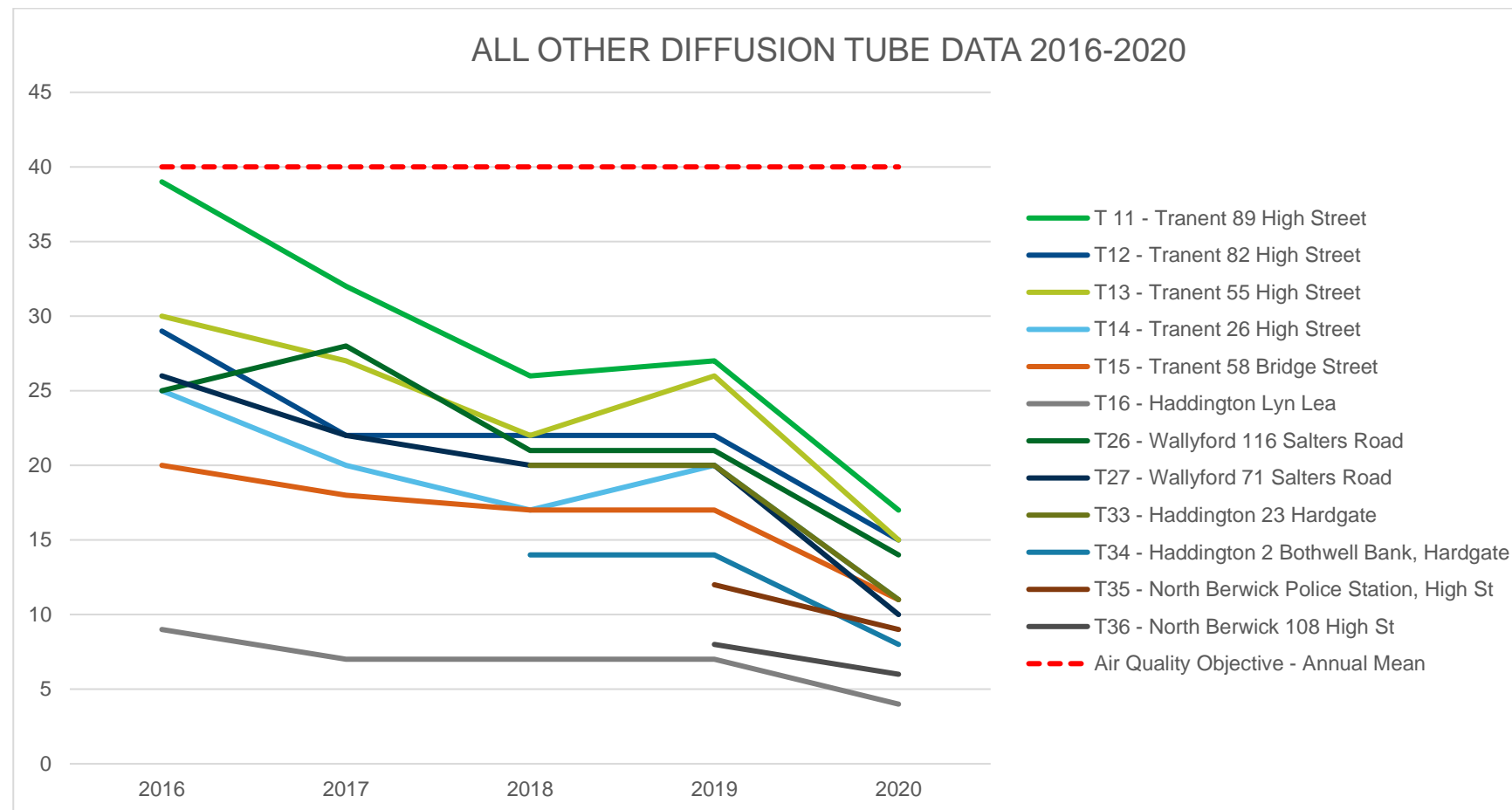


Figure 3: All other diffusion tubes 2016-2020



3.1.4 Particulate Matter (PM₁₀)

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past 5 years with the air quality objective of 18µg/m³.

Figure 4 below shows the trend for PM₁₀ concentrations on Musselburgh North High Street between 2016-2020. It can be seen that there has been no increase in annual mean PM₁₀ concentrations since 2016 and there have been no exceedances of the Air Quality Objective.

Figure 4: PM₁₀ concentrations on Musselburgh North High Street 2016-2020

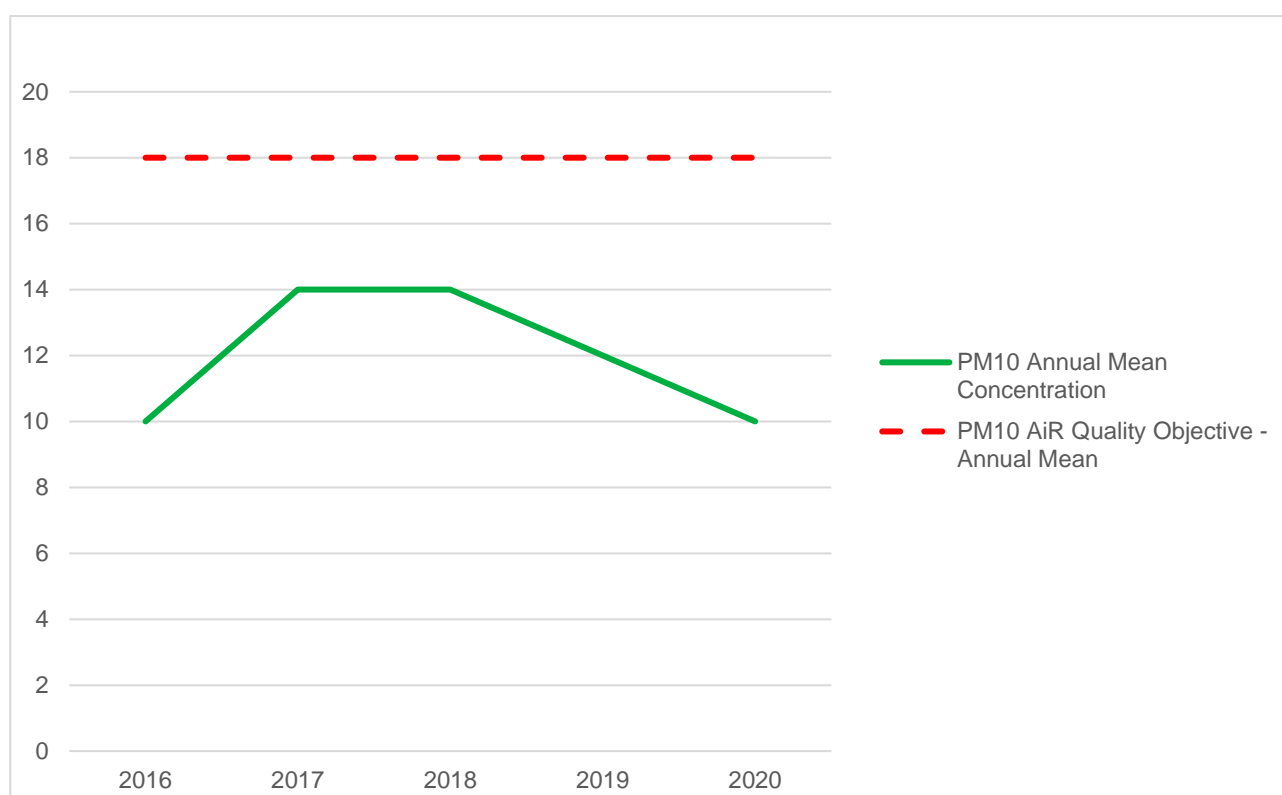


Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than seven times per year.

There have been no exceedances of any PM₁₀ AQO's during 2020.

3.1.5 Particulate Matter (PM_{2.5})

East Lothian do not currently monitor PM_{2.5}. However, it is the intention of East Lothian Council to trade in the current PM₁₀ automatic monitor for a new system that monitors both PM₁₀ and PM_{2.5}. Funding has been secured via the Scottish Government to take this

forward and it is anticipated that the new monitoring system will be in place by midsummer 2021.

3.1.6 Sulphur Dioxide (SO₂)

East Lothian Council do not currently monitor Sulphur dioxide (SO₂)

3.1.7 Carbon Monoxide, Lead and 1,3-Butadiene

East Lothian Council do not currently monitor Carbon Monoxide, Lead or 1,3-Butadiene.

4 New Local Developments

Road Traffic Sources

East Lothian Council can confirm that there are no new:

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed.
- Roads with significantly changed traffic flows.
- Bus or coach stations.

since the 2020 Annual Progress Report.

Other Transport Sources

East Lothian Council can confirm that there are no new:

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

since the 2020 Annual Progress Report.

Industrial Sources

East Lothian Council can confirm that there are no new:

- **Industrial installations:** new or proposed installations for which an air quality assessment has been carried out.
- **Industrial installations:** new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.
- Petrol stations.
- Poultry farms.

since the 2020 Annual Progress Report.

Commercial and Domestic Sources

East Lothian Council can confirm that there are no new:

- Biomass combustion plant – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant.
- Combined Heat & Power (CHP) plant.

since the 2020 Annual Progress Report.

New Developments with Fugitive or Uncontrolled Sources

East Lothian Council can confirm that there are no new:

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations etc.
- Other potential sources of fugitive particulate emissions.

since the 2020 Annual Progress Report.

5 Planning Applications

Planning Permission in Principal 18/00937/PPM was granted consent in December 2019 for a proposed residential development comprising in excess of 600 residential units in Tranent. The proposed site is in close proximity to an existing Research Facility that incorporates an incinerator and 7 diesel generators. The main purpose of 5 1MW generators on the site is to provide back-up power to the site and participate in both TRIAD avoidance and capacity market schemes to provide power to the National Grid. These generators operate less than 500 hours per annum and are therefore not subject to the Emission Limit Values of the Medium Combustion Plant Directive and The Pollution Prevention and Control (Scotland) Amendment Regulations 2017 (Ref 21). Accordingly, East Lothian Council requested an Air Quality Impact Assessment be provided. The Air Quality Report (Ref 22) concluded that part of the site would result in exceedance of the Nitrogen dioxide 1-hour mean Air Quality Objective. Condition 6 of Planning Permission requires that no residential units shall be erected within the yellow shaded area shown in Drawing No. CAR85-902 and titled Air Quality Mitigation Area dated 01.04.2019 unless and until such times as an updated Air Quality Assessment, that demonstrates all statutory Air Quality Objectives are being, and will continue to be met, has been submitted to, and approved in writing by, the Planning Authority.

In October 2019 Planning Permission 18/00485/PPM was granted for a proposed mixed use development at Old Craighall including 1500 homes.

An Air Quality Assessment by Resource and Environmental Consultants (REC) (Ref 23) was submitted in support of the application. It was concluded that the development, including in conjunction with other committed developments in the Musselburgh cluster, would not have a significant impact upon local air quality, in particular on the Musselburgh High Street Air Quality Management Area. No exceedances of Air Quality Objectives are predicted to arise when the development becomes operational in 2024.

6 Impact of COVID-19 upon LAQM

East Lothian Council did not maintain NO₂ diffusion tube monitoring networks as normal (exposure and analysis in line with diffusion tube calendar) during 2020. Tubes were not exposed for the calendar periods required for March, April, May and June 2020 due to Council policy and protocols in relation to minimising employees exposure to Covid 19.

However, East Lothian Council did maintain automatic air quality monitoring sites as normal during 2020

With effect from calendar period July 2020 onwards, diffusion tube monitoring networks have operated as normal and it is anticipated there will be not further impacts on our ability to do this due to Covid 19.

A report on Covid 19 lockdown effects on Air Quality in East Lothian is available at the following link:

http://www.scottishairquality.scot/assets/documents//East_Lothian_covid_analysis_update.d.html

7 Conclusions and Proposed Actions

Conclusions from New Monitoring Data

Monitoring for the 12-month period from 01/01/20 to 31/12/20 indicates that there were no exceedances of any AQO's in East Lothian in 2020. Concentrations of Nitrogen dioxide within the AQMA are significantly below the Annual Mean Air Quality Objective of 40ug/m³, with a maximum annual mean level of 32ug/m³ recorded at T32 - 86 High Street, Musselburgh.

Conclusions relating to New Local Developments

As discussed in Section 5 above, Medium Combustion Plant used to provide back-up power to industrial/commercial sites that participate in TRIAD avoidance and/or capacity market schemes have significant potential to impact upon air quality, in particular the Nitrogen dioxide 1-hour mean Air Quality Objective. These plant generally operate for less than 500 hours per annum and, as such, are exempt from any requirement to comply with Emission Limit Values. It is the opinion of East Lothian Council that additional controls are required by the Scottish Government to regulate these Short Term Operating Reserve (STOR) plant in order to minimise their impacts upon Air Quality and existing or proposed sensitive receptors. Furthermore, any controls would need to consider the impacts of sites comprising individual units as well as sites where multiple units are installed as the cumulative impact of a number of plant on a single site can be significant.

Proposed Actions

This Report and monitoring results from 2020 confirms there were no exceedance's of any AQO during 2020 with the last exceedance being recorded in 2016.

East Lothian Council are currently engaging consultants to undertake a Detailed Assessment of Air Quality in Musselburgh and the results will be available late summer 2021. If the Detailed Assessment concludes future exceedances of the AQO will be unlikely then East Lothian Council will commence the process of revoking the AQMA in Autumn 2021.

East Lothian Council shall continue to implement measures outlined within the AQAP and also develop and publish policies that supplement CAFS throughout 2021 and beyond and will report progress in the Annual Progress Report due in June 2022.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Monitoring Technique | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Inlet Height (m) |
|------------------|---|-----------|---------------|---------------|----------------------|----------|--|--|--|------------------|
| NO _x | Musselburgh North High Street - NO _x | Roadside | 333 941 | 672837 | NO ₂ | N | Gas-phase chemilluminescence detection | 5 | 3 | 1.5 |
| PM ₁₀ | Musselburgh North High Street - BAM | Roadside | 333 941 | 672837 | PM ₁₀ | N | BAM | 5 | 3 | 1.5 |

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.2 – Details of Non-Automatic Monitoring Sites

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) ⁽¹⁾ | Distance to kerb of nearest road (m) ⁽²⁾ | Tube collocated with a Continuous Analyser? |
|---------|--|-----------|---------------|---------------|----------------------|----------|--|---|---|
| T1 | Musselburgh – Newbigging Junction | Roadside | 334659 | 672720 | NO ₂ | Y | Y (15m) | 2m | N |
| T4 | Musselburgh - 87 High St | Roadside | 334526 | 672700 | NO ₂ | Y | Y (15m) | 4m | N |
| T6 | Musselburgh – 147 High Street | Roadside | 334392 | 672652 | NO ₂ | Y | Y 20m) | 3m | N |
| T7 | Musselburgh – 183 High St | Roadside | 334301 | 672632 | NO ₂ | Y | Y 20m) | 3m | N |
| T8 | Musselburgh - Mall Av | Roadside | 334172 | 672524 | NO ₂ | N | Y (25m) | 4m | N |
| T9 | Musselburgh – 45 Bridge Street | Roadside | 334105 | 672750 | NO ₂ | N | Y (3m) | 4m | N |
| T10 | Musselburgh – 150 North High St | Roadside | 333800 | 672822 | NO ₂ | N | Y (3m) | 4m | N |
| T11 | Tranent – 89 High St | Roadside | 340686 | 672692 | NO ₂ | N | Y (3m) | 3m | N |
| T12 | Tranent – 82 High St | Roadside | 340738 | 672687 | NO ₂ | N | Y (4m) | 3m | N |
| T13 | Tranent – 55 High Street | Roadside | 340608 | 672738 | NO ₂ | N | Y (4m) | 3m | N |
| T14 | Tranent – 26 High St | Roadside | 340570 | 672780 | NO ₂ | N | Y (2m) | 2m | N |
| T15 | Tranent – 58 Bridge St | Roadside | 340112 | 672905 | NO ₂ | N | Y (5m) | 2m | N |
| T16 | Haddington - Lyn Lea | Urban | 352249 | 673631 | NO ₂ | N | Y 8m) | 3m | N |
| T23 | Musselburgh - Co-located 133 N High St | Roadside | 333941 | 672837 | NO ₂ | N | Y (5m) | 3m | Y |
| T24 | Musselburgh - Co-located 133 N High St | Roadside | 333941 | 672837 | NO ₂ | N | Y (5m) | 3m | Y |
| T25 | Musselburgh - Co-located 133 N High St | Roadside | 333941 | 672837 | NO ₂ | N | Y (5m) | 3m | Y |
| T26 | Wallyford - 116 Salters Rd | Roadside | 336691 | 672055 | NO ₂ | N | Y (5m) | 2m | N |
| T27 | Wallyford - 71 Salters Rd | Roadside | 336769 | 672127 | NO ₂ | N | Y (5m) | 2m | N |
| T28 | Musselburgh - 15 Bridge Street | Roadside | 334164 | 672708 | NO ₂ | N | Y (5m) | 3m | N |
| T29 | Musselburgh - 167 High Street | Roadside | 334354 | 672643 | NO ₂ | Y | Y (5m) | 3m | N |
| T30 | Musselburgh - 137 High Street | Roadside | 334427 | 672664 | NO ₂ | Y | Y (5m) | 3m | N |
| T31 | Musselburgh - 69 High Street | Roadside | 334580 | 672713 | NO ₂ | Y | Y (5m) | 3m | N |
| T32 | Musselburgh - 86 High Street | Roadside | 334578 | 672695 | NO ₂ | Y | Y (5m) | 3m | N |
| T33 | Haddington – 23 Hardgate | Roadside | 351693 | 673998 | NO ₂ | N | Y (5m) | 2m | N |
| T34 | Haddington – 2 Bothwell Bank, Hardgate | Roadside | 351702 | 674034 | NO ₂ | N | Y (5m) | 2m | N |
| T35 | North Berwick – Police Station High St | Roadside | 355339 | 685307 | NO ₂ | N | Y (5m) | 2m | N |
| T36 | North Berwick – 108 High Street | Roadside | 355186 | 685277 | NO ₂ | N | Y (5m) | 2m | N |

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results (µg/m³) 2016 - 2020

| Site ID | Site Type | Monitoring Type | Valid Data Capture for Monitoring Period (%) ⁽¹⁾ | Valid Data Capture 2020 (%) ⁽²⁾ | NO ₂ Annual Mean Concentration (µg/m ³) | | | | |
|-----------------|-----------|------------------------|---|--|--|---------------------|---------------------|---------------------|---------------------|
| | | | | | 2016 ⁽³⁾ | 2017 ⁽³⁾ | 2018 ⁽³⁾ | 2019 ⁽³⁾ | 2020 ⁽⁴⁾ |
| NO _x | Roadside | Automatic | 99.2 | 99.2 | 25 | 23 | 20 | 20 | 15 |
| T1 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 29 | 30 | 29 | 24 | 16 |
| T4 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 25 | 24 | 23 | 20 | 13 |
| T6 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 40 | 38 | 30 | 32 | 19 |
| T7 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 39 | 34 | 30 | 30 | 19 |
| T8 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 24 | 23 | 23 | 20 | 14 |
| T9 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 28 | 24 | 22 | 23 | 12 |
| T10 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 34 | 33 | 28 | 26 | 19 |
| T11 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 39 | 32 | 26 | 27 | 17 |
| T12 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 29 | 22 | 22 | 22 | 15 |
| T13 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 30 | 27 | 22 | 26 | 15 |
| T14 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 25 | 20 | 17 | 20 | 11 |
| T15 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 20 | 18 | 17 | 17 | 11 |
| T16 | Urban | Passive Diffusion Tube | 66.7 | 66.7 | 9 | 7 | 7 | 7 | 4 |
| T23 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 24 | 22 | 19 | 20 | 11 |
| T24 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 25 | 21 | 19 | 20 | 11 |
| T25 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 26 | 24 | 20 | 20 | 11 |
| T26 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 25 | 28 | 21 | 21 | 14 |
| T27 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 26 | 22 | 20 | 20 | 10 |
| T28 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 28 | 22 | 22 | 21 | 12 |
| T29 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 39 | 35 | 30 | 31 | 19 |
| T30 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 31 | 29 | 25 | 22 | 15 |
| T31 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 43 | 39 | 34 | 32 | 18 |
| T32 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | 33 | 32 | 26 | 31 | 27 |
| T33 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | - | - | 20 ⁽⁴⁾ | 20 | 11 |
| T34 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | - | - | 14 ⁽⁴⁾ | 14 | 8 |
| T35 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | - | - | - | 12 ⁽⁴⁾ | 9 |
| T36 | Roadside | Passive Diffusion Tube | 66.7 | 66.7 | - | - | - | 8 ⁽⁴⁾ | 6 |

Notes: Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in bold.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Means for ALL diffusion tubes have been corrected for bias.

(4) Means have been “annualised” using the Diffusion Tube Processing Tool available via the LAQM Portal and in accordance with Box 7.10 of LAQM.TG(16) as valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A.4 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³ 2016 - 2020

| Site ID | Site Type | Monitoring Type | Valid Data Capture for Monitoring Period (%) ⁽¹⁾ | Valid Data Capture 2020 (%) ⁽²⁾ | NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾ | | | | |
|-----------------|-----------|-----------------|---|--|--|------|------|------|------|
| | | | | | 2016 | 2017 | 2018 | 2019 | 2020 |
| NO _x | Roadside | Automatic | 99.2 | 99.2 | 0 | 0 | 0 | 0 | 0 |

Notes:

Exceedances of the NO₂ 1-hour mean objective (200 µg/m³ not to be exceeded more than 18 times/year) are shown in bold.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.5 – Annual Mean PM₁₀ Monitoring Results (µg/m³) 2016 – 2020

| Site ID | Site Type | Valid Data Capture for Monitoring Period (%) ⁽¹⁾ | Valid Data Capture 2020 (%) ⁽²⁾ | PM ₁₀ Annual Mean Concentration (µg/m ³) | | | | |
|------------------|-----------|---|--|---|------|------|------|------|
| | | | | 2016 | 2017 | 2018 | 2019 | 2020 |
| PM ₁₀ | Roadside | 82 | 82 | 10 | 14 | 14 | 12 | 10 |

Notes:

Exceedances of the PM₁₀ annual mean objective of 18 µg/m³ are shown in bold.

All means have been “annualised” as per LAQM.TG(16), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³ 2016 – 2020

| Site ID | Site Type | Valid Data Capture for Monitoring Period (%) ⁽¹⁾ | Valid Data Capture 2020 (%) ⁽²⁾ | PM ₁₀ 24-Hour Means > 50µg/m ³ ⁽³⁾ | | | | |
|------------------|-----------|---|--|---|------|------|------|---------------------|
| | | | | 2016 | 2017 | 2018 | 2019 | 2020 ⁽²⁾ |
| PM ₁₀ | Roadside | 82 | 82 | 0 | 0 | 0 | 1 | 0 (23.2) |

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50 µg/m³ not to be exceeded more than seven times/year) are shown in bold.

If the period of valid data is less than 85%, the 98.1st percentile of 24-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ 2020 Monthly Diffusion Tube Results (µg/m³)

| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | NO ₂ Mean Concentrations (µg/m ³) | | | | | | | | | | | | Simple Annual Mean (µg/m ³) | | | Comment |
|-------------------|-------------------------|--------------------------|--|------|-----|-----|-----|-----|------|------|------|------|------|------|---|-------------------------------------|--|---|
| | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Raw Data | Bias Adjusted (0.88) and Annualised | Distance Corrected to Nearest Exposure | |
| T1 | 334659 | 672720 | 28.0 | 24.0 | | | | | 17.0 | 15.0 | 19.0 | 22.0 | 26.0 | 20.0 | 21.4 | 16.1 | | |
| T4 | 334526 | 672700 | 24.0 | 19.0 | | | | | 12.0 | 13.0 | 14.0 | 16.0 | 25.0 | 22.0 | 18.1 | 13.7 | | |
| T6 | 334392 | 672652 | 29.0 | 27.0 | | | | | 18.0 | 28.0 | 22.0 | 26.0 | 27.0 | 29.0 | 25.8 | 19.4 | | |
| T7 | 334301 | 672632 | 26.0 | 28.0 | | | | | 19.0 | 27.0 | 26.0 | 26.0 | 24.0 | 29.0 | 25.6 | 19.3 | | |
| T8 | 334172 | 672524 | 22.0 | 20.0 | | | | | 11.0 | 15.0 | 18.0 | 18.0 | 23.0 | 23.0 | 18.8 | 14.1 | | |
| T9 | 334105 | 672750 | 13.0 | 15.0 | | | | | 10.0 | 18.0 | 17.0 | 20.0 | 21.0 | 23.0 | 17.1 | 12.9 | | |
| T10 | 333800 | 672822 | 35.0 | 32.0 | | | | | 13.0 | 18.0 | 22.0 | 23.0 | 33.0 | 28.0 | 25.5 | 19.2 | | |
| T11 | 340686 | 672692 | 27.0 | 22.0 | | | | | 16.0 | 20.0 | 19.0 | 24.0 | 29.0 | 29.0 | 23.3 | 17.5 | | |
| T12 | 340738 | 672687 | 21.0 | 16.0 | | | | | 14.0 | 22.0 | 19.0 | 21.0 | 22.0 | 25.0 | 20.0 | 15.1 | | |
| T13 | 340608 | 672738 | 25.0 | 21.0 | | | | | 15.0 | 19.0 | 18.0 | 19.0 | 16.0 | 31.0 | 20.5 | 15.4 | | |
| T14 | 340570 | 672780 | 14.0 | 13.0 | | | | | 10.0 | 19.0 | 12.0 | 17.0 | 16.0 | 20.0 | 15.1 | 11.4 | | |
| T15 | 340112 | 672905 | 17.0 | 18.0 | | | | | 9.0 | 13.0 | 13.0 | 14.0 | 18.0 | 17.0 | 14.9 | 11.2 | | |
| T16 | 352249 | 673631 | 7.0 | 6.0 | | | | | 3.0 | 4.0 | 5.0 | 9.0 | 7.0 | 9.0 | 6.3 | 4.7 | | |
| T23 | 333941 | 672837 | 19.0 | 6.0 | | | | | 10.0 | 14.0 | 16.0 | 15.0 | 18.0 | 19.0 | - | - | | Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only |
| T24 | 333941 | 672837 | 16.0 | 16.0 | | | | | 10.0 | 16.0 | 15.0 | 13.0 | 6.0 | 22.0 | - | - | | Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only |
| T25 | 333941 | 672837 | 20.0 | 18.0 | | | | | 10.0 | 14.0 | 17.0 | 16.0 | 19.0 | 23.0 | 15.3 | 11.6 | | Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only |
| T26 | 336691 | 672055 | 20.0 | 15.0 | | | | | 12.0 | 19.0 | 18.0 | 20.0 | 21.0 | 24.0 | 18.6 | 14.0 | | |
| T27 | 336769 | 672127 | 2.0 | 3.0 | | | | | 10.0 | 16.0 | 15.0 | 17.0 | 21.0 | 25.0 | 13.6 | 10.3 | | |
| T28 | 334164 | 672708 | 18.0 | 12.0 | | | | | 11.0 | 17.0 | 18.0 | 18.0 | 19.0 | 21.0 | 16.8 | 12.6 | | |
| T29 | 334354 | 672643 | 26.0 | 24.0 | | | | | 21.0 | 27.0 | 27.0 | 27.0 | 24.0 | 26.0 | 25.3 | 19.0 | | |
| T30 | 334427 | 672664 | 24.0 | 21.0 | | | | | 13.0 | 17.0 | 20.0 | 22.0 | 22.0 | 20.0 | 19.9 | 15.0 | | |
| T31 | 334580 | 672713 | 30.0 | 24.0 | | | | | 23.0 | 24.0 | 25.0 | 23.0 | 25.0 | 24.0 | 24.8 | 18.6 | | |
| T32 | 334578 | 672695 | 47.0 | 66.0 | | | | | 15.0 | 41.0 | 19.0 | 42.0 | 28.0 | 30.0 | 36.0 | 27.1 | | |
| T33 | 351693 | 673998 | 20.0 | 18.0 | | | | | 12.0 | 13.0 | 13.0 | 16.0 | 20.0 | 7.0 | 14.9 | 11.2 | | |
| T34 | 351702 | 674034 | 11.0 | 11.0 | | | | | 7.0 | 10.0 | 12.0 | 10.0 | 13.0 | 14.0 | 11.0 | 8.3 | | |
| T35 | 355339 | 685307 | 27.0 | 20.0 | | | | | 6.0 | 7.0 | 8.0 | 8.0 | 12.0 | 11.0 | 12.4 | 9.3 | | |
| T36 | 355186 | 685277 | 10.0 | 9.0 | | | | | 6.0 | 9.0 | 8.0 | 10.0 | 12.0 | 9.0 | 9.1 | 6.9 | | |

Notes:

(1) See Appendix C for details on bias adjustment

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

Air Pollution Report

1st January to 31st December 2020



East Lothian Musselburgh N High St (Site ID: MUSS)

These data have been **fully ratified**.

Only relevant statistics for LAQM are presented in the table. Cells with - indicate no data available or calculated.

| Pollutant | NO µg/m ³ | NO ₂ µg/m ³ | NO ₂ asNO ₂ µg/m ³ | PM ₁₀ µg/m ³ |
|----------------------------------|-------------------------|--------------------------------------|--|---------------------------------------|
| Number Days Low | - | 366 | - | 289 |
| Number Days Moderate | - | 0 | - | 0 |
| Number Days High | - | 0 | - | 0 |
| Number Days Very High | - | 0 | - | 0 |
| Max Daily Mean | 51 | 50 | 107 | 31 |
| Annual Max | 206 | 96 | 412 | 94 |
| Annual Mean | 7 | 15 | 26 | 10 |
| 98th Percentile of daily mean | - | - | - | 23 |
| 90th Percentile of daily mean | - | - | - | 16 |
| 99.8th Percentile of hourly mean | - | 74 | - | - |
| 98th Percentile of hourly mean | 39 | 50 | 105 | 28 |
| 95th Percentile of hourly mean | 25 | 40 | 77 | 22 |
| 50th Percentile of hourly mean | 4 | 12 | 18 | 8 |
| % Annual data capture | 99.25% | 99.21% | 99.21% | 82.12% |

Instruments: PM₁₀: BAM Gravimetric Equivalent (correction applied)

All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure. NO_x mass units are NO_x as NO₂ µg m⁻³

Note: For a strict comparison against the objectives there must be a data capture of 85% or greater throughout the calendar year.

1 / 3

Report produced by Ricardo Energy & Environment

| Pollutant | Air Quality Standards (Scotland) Regulations 2010 | Exceedances | Days |
|---|---|-------------|------|
| PM10 particulate matter (Hourly measured) | daily mean > 50 microgrammes per metre cubed | 0 | 0 |
| PM10 particulate matter (Hourly measured) | Annual mean > 18 microgrammes per metre cubed | 0 | - |
| Nitrogen dioxide | Hourly Mean > 200 microgrammes per metre cubed | 0 | 0 |
| Nitrogen dioxide | Annual Mean > 40 microgrammes per metre cubed | 0 | - |

The annualisation of the diffusion tubes has been carried out using the Diffusion Tube Processing Tool available via the LAQM Portal and in accordance with Box 7.10 of LAQM.TG(16) as valid data capture for the full calendar year is less than 75%. Details of the inputs are shown below.

The annualisation factor is 0.8563, based on:

- Bush Estate AURN, rural background, 18m southwest of East Lothian
- Dundee Mains Loan AURN, urban background, 26m north of East Lothian
- Edinburgh St Leonards AURN, urban background, 5m west of East Lothian
- Peebles AURN, urban background, 10m west of East Lothian

This is in accordance with Box 7.9 of LAQMTG.16 (April 2021)

East Lothian Council also checked the National Bias Adjustment factor. The current version (09/21) of the diffusion tube bias adjustment factors spreadsheet was released in October 2021. This provides the third and final round of National Diffusion Tube Bias Adjustment Factors for 2020 diffusion tube monitoring data.

East Lothian diffusion tubes were analysed by Edinburgh Scientific Services and the analysis was 50% TEA in acetone as per previous monitored years. The national factor for 2020 is 0.85. The calculated local bias adjustment factor for 2020 is high (1.02) in comparison to the national factor for 2020 and the local factor for previous years (0.9 in 2019 and 0.9 in 2018).

| National Diffusion Tube Bias Adjustment Factor Spreadsheet | | | | | | Spreadsheet Version Number: 09/21 | | | | |
|--|---|--|--|---|--------------------------|---|--|----------|-----------------------------|---|
| <p>Follow the steps below <u>in the correct order</u> to show the results of <u>relevant</u> co-location studies</p> <p>Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods</p> <p>Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet</p> <p>This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.</p> | | | | | | | | | | <p>This spreadsheet will be updated at the end of March 2022</p> <p>LAQM Helpdesk Website</p> |
| The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory. | | | | | | Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd. | | | | |
| Step 1: | Step 2: | Step 3: | Step 4: | | | | | | | |
| Select the Laboratory that Analyses Your Tubes from the Drop-Down List | Select a Preparation Method from the Drop-Down List | Select a Year from the Drop-Down List | <p>Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution.</p> <p>Where there is more than one study, use the overall factor³ shown in blue at the foot of the final column.</p> | | | | | | | |
| If a laboratory is not shown, we have no data for this laboratory. | If a preparation method is not shown, we have no data for this method at this laboratory. | If a year is not shown, we have no data ² | If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953 | | | | | | | |
| Analysed By ¹ | Method <small>To undo your selection, choose (All) from the pop-up list</small> | Year ⁵ <small>To undo your selection, choose (All)</small> | Site Type | Local Authority | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) ($\mu\text{g}/\text{m}^3$) | Automatic Monitor Mean Conc. (Cm) ($\mu\text{g}/\text{m}^3$) | Bias (B) | Tube Precision ⁶ | Bias Adjustment Factor (A) (Cm/Dm) |
| Edinburgh Scientific Services | 50% TEA in acetone | 2020 | KS | Marylebone Road Intercomparison | 10 | 51 | 43 | 17.4% | G | 0.85 |
| Edinburgh Scientific Services | 50% TEA in acetone | 2020 | R | Stirling Council | 11 | 16 | 15 | 11.6% | G | 0.90 |
| Edinburgh Scientific Services | 50% TEA in acetone | 2020 | KS | The City of Edinburgh Council | 9 | 31 | 28 | 10.3% | G | 0.91 |
| Edinburgh Scientific Services | 50% TEA in acetone | 2020 | R | The City of Edinburgh Council | 9 | 21 | 16 | 30.9% | P | 0.76 |
| Edinburgh Scientific Services | 50% TEA in acetone | 2020 | R | The City of Edinburgh Council | 9 | 33 | 28 | 17.9% | G | 0.85 |
| Edinburgh Scientific Services | 50% TEA in acetone | 2020 | | Overall Factor³ (5 studies) | | | | | Use | 0.85 |



Diffusion Tube Calendar Inputs

Enter data into the pink cells (if required)


| | |
|-----------------|------------|
| Monitoring Year | 2020 |
| Year Start Date | 08/01/2020 |
| Year End Date | 06/01/2021 |

[Click here to Reset Tool](#)

[i\) Click here to Select Monitoring Year](#)

Diffusion Tube Deployment Dates

| Month | Tube On | Tube Off | Comments |
|-------|------------|------------|----------|
| Jan | 08/01/2020 | 05/02/2020 | |
| Feb | 05/02/2020 | 04/03/2020 | |
| Mar | 04/03/2020 | 01/04/2020 | |
| Apr | 01/04/2020 | 29/04/2020 | |
| May | 29/04/2020 | 03/06/2020 | |
| Jun | 03/06/2020 | 01/07/2020 | |
| Jul | 01/07/2020 | 29/07/2020 | |
| Aug | 29/07/2020 | 02/09/2020 | |
| Sep | 02/09/2020 | 30/09/2020 | |
| Oct | 30/09/2020 | 04/11/2020 | |
| Nov | 04/11/2020 | 02/12/2020 | |
| Dec | 02/12/2020 | 06/01/2021 | |



Diffusion Tube Raw Data Inputs

Enter data into the pink cells

Annualisation required, follow instructions on STEP 2a Annualisation Inputs tab

i) Enter raw diffusion tube data

| Diffusion Tube ID | Site Name | Duplicate/Triplicate ID | New or Existing Site? | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Distance to Relevant Exposure (m) | Distance to Kerb of Nearest Road (m) | NO _x Monthly Concentration Data (µg/m ³) | | | | | | | | | | | | Requires Annualisation? | |
|-------------------|--|-------------------------|-----------------------|-------------------------|--------------------------|------------------|-----------------------------------|--------------------------------------|---|------|-----|-----|-----|-----|-----|------|------|------|------|------|-------------------------|-----|
| | | | | | | | | | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | | |
| T1 | Muskelburgh – Newbigging Junction | | Existing | 334659 | 672720 | Roadside | 15.0 | 2.0 | 28.0 | 24.0 | | | | | | 17.0 | 15.0 | 19.0 | 22.0 | 26.0 | 20.0 | YES |
| T4 | Muskelburgh - 87 High St | | Existing | 334526 | 672700 | Roadside | 15.0 | 4.0 | 24.0 | 19.0 | | | | | | 12.0 | 13.0 | 14.0 | 16.0 | 25.0 | 22.0 | YES |
| T6 | Muskelburgh – 147 High Street | | Existing | 334392 | 672652 | Roadside | 20.0 | 3.0 | 29.0 | 27.0 | | | | | | 18.0 | 28.0 | 22.0 | 26.0 | 27.0 | 29.0 | YES |
| T7 | Muskelburgh – 183 High St | | Existing | 334301 | 672632 | Roadside | 20.0 | 3.0 | 26.0 | 28.0 | | | | | | 19.0 | 27.0 | 26.0 | 26.0 | 24.0 | 29.0 | YES |
| T8 | Muskelburgh - Mail Av | | Existing | 334172 | 672524 | Roadside | 25.0 | 4.0 | 22.0 | 20.0 | | | | | | 11.0 | 15.0 | 18.0 | 18.0 | 23.0 | 23.0 | YES |
| T9 | Muskelburgh – 45 Bridge Street | | Existing | 334105 | 672750 | Roadside | 3.0 | 4.0 | 13.0 | 15.0 | | | | | | 10.0 | 18.0 | 17.0 | 20.0 | 21.0 | 23.0 | YES |
| T10 | Muskelburgh – 150 North High St | | Existing | 333800 | 672822 | Roadside | 3.0 | 4.0 | 35.0 | 32.0 | | | | | | 13.0 | 18.0 | 22.0 | 23.0 | 33.0 | 28.0 | YES |
| T11 | Tranent – 89 High St | | Existing | 340686 | 672692 | Roadside | 3.0 | 3.0 | 27.0 | 22.0 | | | | | | 16.0 | 20.0 | 19.0 | 24.0 | 29.0 | 29.0 | YES |
| T12 | Tranent – 82 High St | | Existing | 340738 | 672687 | Roadside | 4.0 | 3.0 | 21.0 | 16.0 | | | | | | 14.0 | 22.0 | 19.0 | 21.0 | 22.0 | 25.0 | YES |
| T13 | Tranent – 55 High Street | | Existing | 340608 | 672738 | Roadside | 4.0 | 3.0 | 25.0 | 21.0 | | | | | | 15.0 | 19.0 | 18.0 | 19.0 | 16.0 | 31.0 | YES |
| T14 | Tranent – 26 High St | | Existing | 340570 | 672780 | Roadside | 2.0 | 2.0 | 14.0 | 13.0 | | | | | | 10.0 | 19.0 | 12.0 | 17.0 | 16.0 | 20.0 | YES |
| T15 | Tranent – 58 Bridge St | | Existing | 340112 | 672905 | Roadside | 5.0 | 2.0 | 17.0 | 18.0 | | | | | | 9.0 | 13.0 | 13.0 | 14.0 | 18.0 | 17.0 | YES |
| T16 | Haddington - Lyn Lea | | Existing | 352249 | 673631 | Urban Background | 8.0 | 2.0 | 7.0 | 6.0 | | | | | | 3.0 | 4.0 | 5.0 | 9.0 | 7.0 | 9.0 | YES |
| T23 | Muskelburgh - Co-located 133 N High St | TRIPLICATE SET 1 | Existing | 333941 | 672837 | Roadside | 5.0 | 3.0 | 19.0 | 6.0 | | | | | | 10.0 | 14.0 | 16.0 | 15.0 | 18.0 | 19.0 | YES |
| T24 | Muskelburgh - Co-located 133 N High St | TRIPLICATE SET 1 | Existing | 333941 | 672837 | Roadside | 5.0 | 3.0 | 16.0 | 16.0 | | | | | | 10.0 | 16.0 | 15.0 | 13.0 | 6.0 | 22.0 | YES |
| T25 | Muskelburgh - Co-located 133 N High St | TRIPLICATE SET 1 | Existing | 333941 | 672837 | Roadside | 5.0 | 3.0 | 20.0 | 18.0 | | | | | | 10.0 | 14.0 | 17.0 | 16.0 | 19.0 | 23.0 | YES |
| T26 | Wallyford - 116 Salters Rd | | Existing | 336691 | 672055 | Roadside | 5.0 | 2.0 | 20.0 | 15.0 | | | | | | 12.0 | 19.0 | 18.0 | 20.0 | 21.0 | 24.0 | YES |
| T27 | Wallyford - 71 Salters Rd | | Existing | 336769 | 672127 | Roadside | 5.0 | 2.0 | 2.0 | 3.0 | | | | | | 10.0 | 16.0 | 15.0 | 17.0 | 21.0 | 25.0 | YES |
| T28 | Muskelburgh - 15 Bridge Street | | Existing | 334164 | 672708 | Roadside | 5.0 | 3.0 | 18.0 | 12.0 | | | | | | 11.0 | 17.0 | 18.0 | 18.0 | 19.0 | 21.0 | YES |
| T29 | Muskelburgh - 167 High Street | | Existing | 334354 | 672643 | Roadside | 5.0 | 3.0 | 26.0 | 24.0 | | | | | | 21.0 | 27.0 | 27.0 | 27.0 | 24.0 | 26.0 | YES |
| T30 | Muskelburgh - 137 High Street | | Existing | 334427 | 672664 | Roadside | 5.0 | 3.0 | 24.0 | 21.0 | | | | | | 13.0 | 17.0 | 20.0 | 22.0 | 22.0 | 20.0 | YES |
| T31 | Muskelburgh - 69 High Street | | Existing | 334580 | 672713 | Roadside | 5.0 | 3.0 | 30.0 | 24.0 | | | | | | 23.0 | 24.0 | 25.0 | 23.0 | 25.0 | 24.0 | YES |
| T32 | Muskelburgh - 86 High Street | | Existing | 334578 | 672695 | Roadside | 5.0 | 3.0 | 47.0 | 66.0 | | | | | | 15.0 | 41.0 | 19.0 | 42.0 | 28.0 | 30.0 | YES |
| T33 | Haddington – 23 Hardgate | | Existing | 351693 | 673998 | Roadside | 5.0 | 2.0 | 20.0 | 18.0 | | | | | | 12.0 | 13.0 | 13.0 | 16.0 | 20.0 | 7.0 | YES |
| T34 | Haddington – 2 Bothwell Bank, Hardgate | | Existing | 351702 | 674034 | Roadside | 5.0 | 2.0 | 11.0 | 11.0 | | | | | | 7.0 | 10.0 | 12.0 | 10.0 | 13.0 | 14.0 | YES |
| T35 | North Berwick – Police Station High St | | Existing | 355339 | 685307 | Roadside | 5.0 | 2.0 | 27.0 | 20.0 | | | | | | 6.0 | 7.0 | 8.0 | 8.0 | 12.0 | 11.0 | YES |
| T36 | North Berwick – 108 High Street | | Existing | 355186 | 685277 | Roadside | 5.0 | 2.0 | 10.0 | 9.0 | | | | | | 6.0 | 9.0 | 8.0 | 10.0 | 12.0 | 9.0 | YES |

Continuous Monitoring data from the automatic analyser were input from 0100 hours on 08/01/20 until 2300 hours on 06/01/21 as shown in the data set sample below:



Continuous Monitoring Data Inputs for Annualisation

Enter data into the pink cells

i) Enter Continuous Background Monitoring Data

| | |
|-------------------|------------|
| Start Date | 08/01/2020 |
| Start Time | 01:00 |


| | NO ₂ Hourly Concentrations (µg/m ³) | | | |
|------------------------|--|---------------------------------------|---------------------------------------|---------------------------------------|
| | Sufficient (>85%) annual data capture | Sufficient (>85%) annual data capture | Sufficient (>85%) annual data capture | Sufficient (>85%) annual data capture |
| Date & Time | Edinburgh St Leonards | Dundee Mains Loan | Edinburgh St Leonards | Peebles |
| 08/01/2020 01:00 | 0.43027 | 1.86028 | 10.56212 | 0.57298 |
| 08/01/2020 02:00 | | 2.7125 | 11.84798 | 0.24205 |
| 08/01/2020 03:00 | 0.21309 | 2.3248 | 13.82247 | 0.38407 |
| 08/01/2020 04:00 | 0.2677 | 1.39499 | 9.18337 | 0.62011 |
| 08/01/2020 05:00 | 0.37445 | 2.03438 | 11.03977 | 0.43194 |
| 08/01/2020 06:00 | 0.59121 | 2.55755 | 10.59167 | 1.02187 |
| 08/01/2020 07:00 | 1.07935 | 3.2544 | 17.26996 | 1.01634 |
| 08/01/2020 08:00 | 1.35236 | 5.75341 | 13.44455 | 1.60848 |
| 08/01/2020 09:00 | 2.7589 | 8.42641 | 13.487 | 2.42892 |
| 08/01/2020 10:00 | 4.22005 | 8.83381 | 11.87742 | 2.42449 |
| 08/01/2020 11:00 | 2.21412 | 7.73022 | 12.09342 | 1.94136 |
| 08/01/2020 12:00 | 2.59429 | 7.03371 | 11.18798 | 2.57474 |



Annualisation Summary - Information Only

[Go to STEP 3 - Bias Adjustment](#)

| Diffusion Tube ID | Annualisation Factor Edinburgh St Leonards | Annualisation Factor Dundee Mains Loan | Annualisation Factor Edinburgh St Leonards | Annualisation Factor Peebles | Average Annualisation Factor | Raw Data Simple Annual Mean (µg/m3) | Annualised Data Simple Annual Mean (µg/m3) | Comments |
|-------------------|--|--|--|------------------------------|------------------------------|-------------------------------------|--|--|
| T1 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 21.4 | 18.3 | |
| T4 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 18.1 | 15.5 | |
| T6 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 25.8 | 22.0 | |
| T7 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 25.6 | 21.9 | |
| T8 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 18.8 | 16.1 | |
| T9 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 17.1 | 14.7 | |
| T10 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 25.5 | 21.8 | |
| T11 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 23.3 | 19.9 | |
| T12 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 20.0 | 17.1 | |
| T13 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 20.5 | 17.6 | |
| T14 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 15.1 | 13.0 | |
| T15 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 14.9 | 12.7 | |
| T16 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 6.3 | 5.4 | |
| T23 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | - | - | <i>Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only</i> |
| T24 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | - | - | <i>Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only</i> |
| T25 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 15.3 | 13.1 | <i>Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only</i> |
| T26 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 18.6 | 15.9 | |
| T27 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 13.6 | 11.7 | |
| T28 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 16.8 | 14.3 | |
| T29 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 25.3 | 21.6 | |
| T30 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 19.9 | 17.0 | |
| T31 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 24.8 | 21.2 | |
| T32 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 36.0 | 30.8 | |
| T33 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 14.9 | 12.7 | |
| T34 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 11.0 | 9.4 | |
| T35 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 12.4 | 10.6 | |
| T36 | 0.9191 | 0.8585 | 0.7758 | 0.8718 | 0.8563 | 9.1 | 7.8 | |
| | | | | | | | | |



Bias Adjustment Factor

[Enter data into the pink cells](#)

Click here to access the latest National Diffusion Tube Bias Adjustment Spreadsheet

| | | |
|--|------|--|
| i) Enter National Bias Adjustment Factor | 0.88 | |
|--|------|--|

| | | |
|--|------|---|
| ii) How many co-located diffusion tube sites are there in your Local Authority area? | 1 | Follow instructions in STEP 3a Local Bias Adjustment tab to calculate local factor, then return to this tab to define which factor to use for data processing |
| Local Bias Adjustment Factor | 1.02 | Review bias adjusted annual mean results below and define which factor to use for data processing |

| | | |
|---|----------|--|
| iii) Which bias adjustment factor will be used for data processing? | National | Proceed to STEP 4 - Fall off with Distance tab |
|---|----------|--|

| Diffusion Tube ID | Simple Annual Mean (µg/m3) | | | Comment |
|-------------------|----------------------------|------------------------------|---------------------|---|
| | Raw Data | Bias Adjusted and Annualised | | |
| | | National Factor (0.88) | Local Factor (1.02) | |
| T1 | 21.4 | 16.1 | 18.7 | |
| T4 | 18.1 | 13.7 | 15.8 | |
| T6 | 25.8 | 19.4 | 22.5 | |
| T7 | 25.6 | 19.3 | 22.4 | |
| T8 | 18.8 | 14.1 | 16.4 | |
| T9 | 17.1 | 12.9 | 15.0 | |
| T10 | 25.5 | 19.2 | 22.3 | |
| T11 | 23.3 | 17.5 | 20.3 | |
| T12 | 20.0 | 15.1 | 17.5 | |
| T13 | 20.5 | 15.4 | 17.9 | |
| T14 | 15.1 | 11.4 | 13.2 | |
| T15 | 14.9 | 11.2 | 13.0 | |
| T16 | 6.3 | 4.7 | 5.5 | |
| T23 | - | - | - | Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only |
| T24 | - | - | - | Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only |
| T25 | 15.3 | 11.6 | 13.4 | Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only |
| T26 | 18.6 | 14.0 | 16.3 | |
| T27 | 13.6 | 10.3 | 11.9 | |
| T28 | 16.8 | 12.6 | 14.6 | |
| T29 | 25.3 | 19.0 | 22.1 | |
| T30 | 19.9 | 15.0 | 17.4 | |
| T31 | 24.8 | 18.6 | 21.6 | |
| T32 | 36.0 | 27.1 | 31.4 | |
| T33 | 14.9 | 11.2 | 13.0 | |
| T34 | 11.0 | 8.3 | 9.6 | |
| T35 | 12.4 | 9.3 | 10.8 | |
| T36 | 9.1 | 6.9 | 8.0 | |
| | | | | |



Local Bias Adjustment 1

Enter data into the pink cells

i) Enter co-located diffusion tube period means

| Period | NO ₂ Period Mean (µg/m ³) | | | Triplicate Mean | Standard Deviation | Coefficient of Variation (CV) | 95% CI of Mean | Data Quality Check |
|--------|--|--------|--------|-----------------|--------------------|-------------------------------|----------------|------------------------|
| | Tube 1 | Tube 2 | Tube 3 | | | | | |
| 1 | 19.0 | 16.0 | 20.0 | 18.3 | 2.1 | 11% | 5.2 | Good |
| 2 | 16.0 | 16.0 | 18.0 | 16.7 | 1.2 | 7% | 2.9 | Good |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | 10.0 | 19.0 | 10.0 | 13.0 | 5.2 | 40% | 12.9 | Poor Precision |
| 8 | 14.0 | 16.0 | 14.0 | 14.7 | 1.2 | 8% | 2.9 | Good |
| 9 | 16.0 | 15.0 | 17.0 | 16.0 | 1.0 | 6% | 2.5 | Good |
| 10 | 15.0 | 13.0 | 16.0 | 14.7 | 1.5 | 10% | 3.8 | Good |
| 11 | 18.0 | 6.0 | 19.0 | 14.3 | 7.2 | 50% | 18.0 | Poor Precision |
| 12 | 19.0 | 22.0 | 23.0 | 21.3 | 2.1 | 10% | 5.2 | Good |
| | | | | | | | | Good Overall Precision |

ii) Enter co-located continuous monitor hourly monitoring data

| | |
|------------|------------|
| Start Date | 08/01/2020 |
| Start Time | 01:00 |

| Date & Time | NO ₂ Hourly Concentrations (µg/m ³) |
|-------------|--|
| ##### | 2.6 |
| ##### | 2.2 |
| ##### | 1.6 |
| ##### | 2.2 |
| ##### | 2.7 |
| ##### | 3.5 |
| ##### | 7.9 |
| ##### | 14.6 |
| ##### | 15 |
| ##### | 13.1 |
| ##### | 11.2 |
| ##### | 11.1 |
| ##### | 11.5 |
| ##### | 10.8 |
| ##### | 17.3 |

| Period | Period Mean | Data Capture (%) | Data Quality Check |
|--------|-------------|------------------|---------------------------|
| 1 | 17.4 | 99.9% | Good |
| 2 | 16.9 | 100.0% | Good |
| 3 | 18.4 | 100.0% | Good |
| 4 | 10.1 | 100.0% | Good |
| 5 | 10.0 | 100.0% | Good |
| 6 | 11.0 | 99.9% | Good |
| 7 | 9.4 | 100.0% | Good |
| 8 | 13.5 | 99.6% | Good |
| 9 | 16.3 | 100.0% | Good |
| 10 | 16.8 | 100.0% | Good |
| 11 | 20.0 | 100.0% | Good |
| 12 | 22.4 | 99.9% | Good |
| | | | Good Overall Data Capture |




Local Bias Adjustment Outputs - Information Only

Go back to STEP 3 - Bias Adjustment to define factor

| | STEP 3a Local Bias Adjustment Input 1 | STEP 3b Local Bias Adjustment Input 2 | STEP 3c Local Bias Adjustment Input 3 | STEP 3d Local Bias Adjustment Input 4 | STEP 3e Local Bias Adjustment Input 5 |
|--|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Periods used to calculate bias | 6 | | | | |
| Bias Adjustment Factor A | 1.02 (0.95 - 1.09) | | | | |
| Diffusion Tube Bias B | -2% (-9% - 5%) | | | | |
| | | | | | |
| Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$) | 16.9 | | | | |
| Mean CV (Precision) | 8.8% | | | | |
| | | | | | |
| Automatic Mean ($\mu\text{g}/\text{m}^3$) | 17.2 | | | | |
| Data Capture | 100% | | | | |
| | | | | | |
| Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$) | 17 (16 - 18) | | | | |
| | | | | | |
| Overall Diffusion Tube Precision | Good Overall Precision | | | | |
| Overall Continuous Monitor Data Capture | Good Overall Data Capture | | | | |
| | | | | | |
| Local Bias Adjustment Factor | 1.02 | | | | |

A fall-off for Distance adjustment was not required as shown below:



**BUREAU
VERITAS**

Fall off with Distance Inputs

Enter data into the pink cells

Distance adjustment not required. See Annual Results Summary tab

| Diffusion Tube ID | Distance (m) | | NO ₂ Annual Mean Concentration (µg/m ³) | | | Comment |
|----------------------|----------------------------|------------------|--|------------|-----------------------|---------|
| | Monitoring Site to Kerb | Receptor to Kerb | Bias Adjusted and Annualised | Background | Predicted at Receptor | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |



Annual Report Results Table - Table B.1

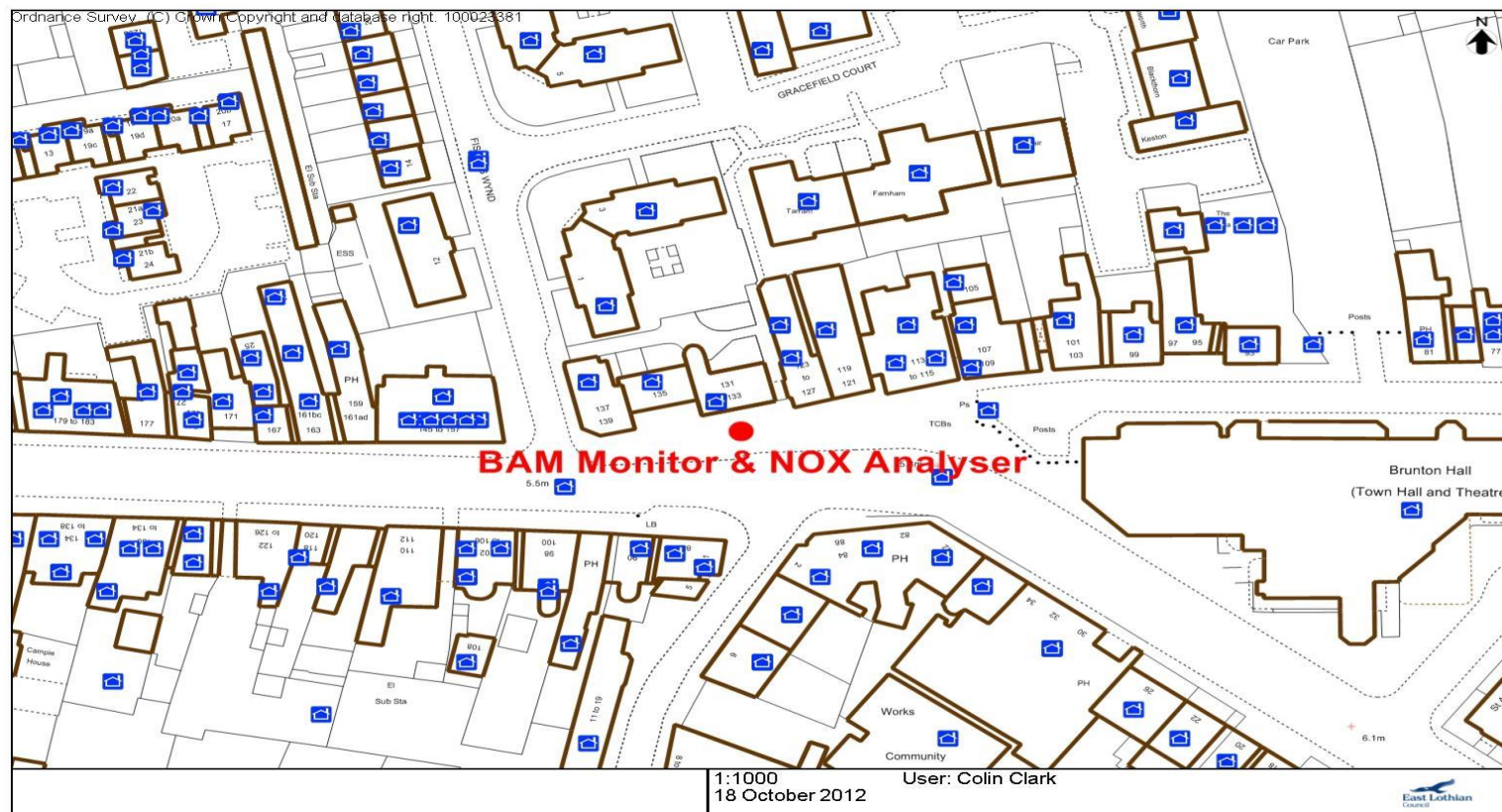
| STEP 1 - DT Calendar Inputs Error | STEP 2 - Diffusion Tube Inputs Error | STEP 2a - Annualisation Inputs Error | STEP 3 - Bias Adjustment Error | STEP 4 - Fall off with Distance Error |
|---|--|--|--|---|
| None | None | None | None | None |

Bias Adjustment Factor = National

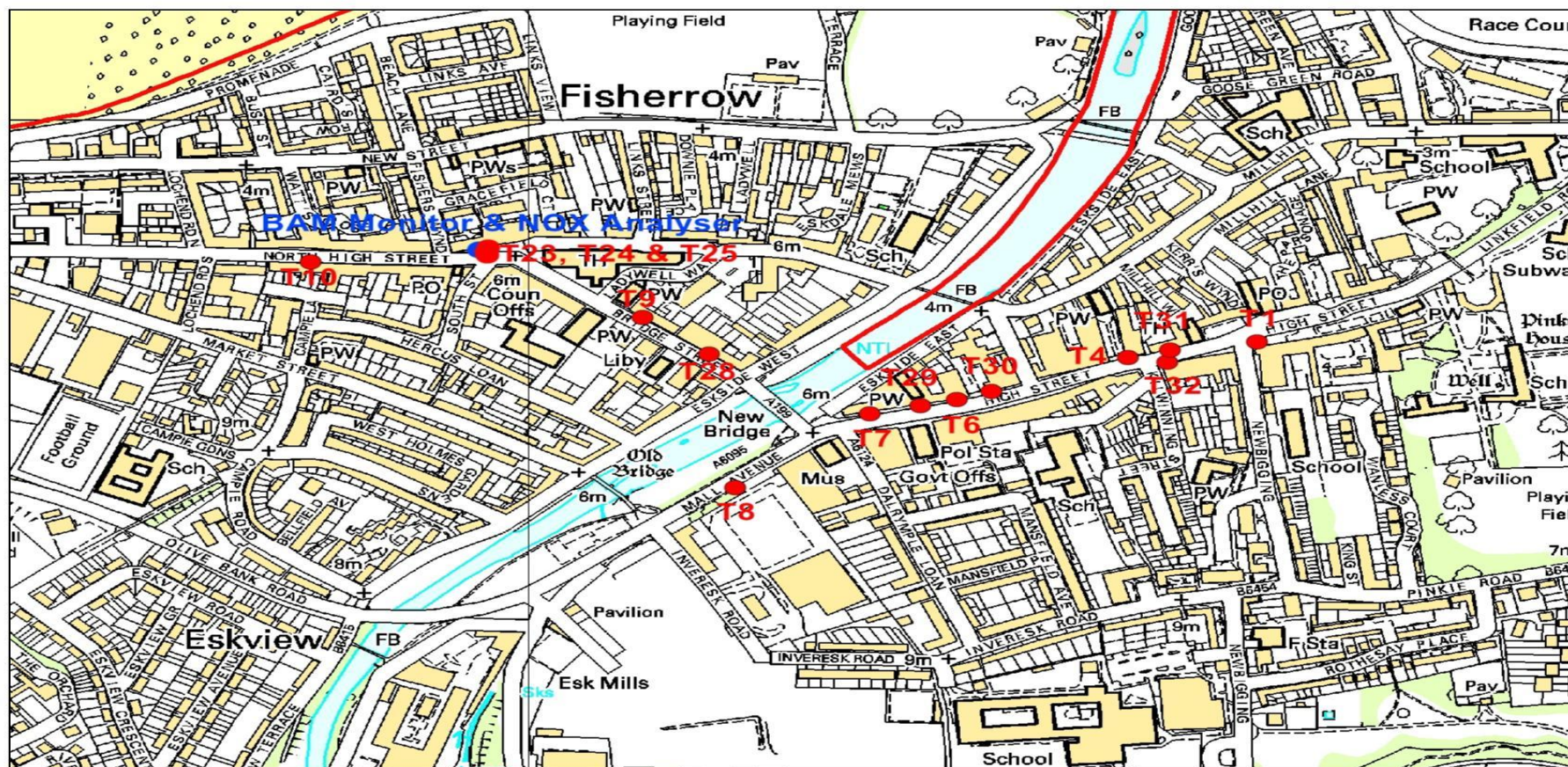
| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | NO ₂ Mean Concentrations (µg/m ³) | | | | | | | | | | | | Simple Annual Mean (µg/m ³) | | | Comment |
|-------------------|-------------------------|--------------------------|--|------|-----|-----|-----|-----|------|------|------|------|------|------|---|-------------------------------------|--|---|
| | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Raw Data | Bias Adjusted (0.88) and Annualised | Distance Corrected to Nearest Exposure | |
| T1 | 334659 | 672720 | 28.0 | 24.0 | | | | | 17.0 | 15.0 | 19.0 | 22.0 | 26.0 | 20.0 | 21.4 | 16.1 | | |
| T4 | 334526 | 672700 | 24.0 | 19.0 | | | | | 12.0 | 13.0 | 14.0 | 16.0 | 25.0 | 22.0 | 18.1 | 13.7 | | |
| T6 | 334392 | 672652 | 29.0 | 27.0 | | | | | 18.0 | 28.0 | 22.0 | 26.0 | 27.0 | 29.0 | 25.8 | 19.4 | | |
| T7 | 334301 | 672632 | 26.0 | 28.0 | | | | | 19.0 | 27.0 | 26.0 | 26.0 | 24.0 | 29.0 | 25.6 | 19.3 | | |
| T8 | 334172 | 672524 | 22.0 | 20.0 | | | | | 11.0 | 15.0 | 18.0 | 18.0 | 23.0 | 23.0 | 18.8 | 14.1 | | |
| T9 | 334105 | 672750 | 13.0 | 15.0 | | | | | 10.0 | 18.0 | 17.0 | 20.0 | 21.0 | 23.0 | 17.1 | 12.9 | | |
| T10 | 333800 | 672822 | 35.0 | 32.0 | | | | | 13.0 | 18.0 | 22.0 | 23.0 | 33.0 | 28.0 | 25.5 | 19.2 | | |
| T11 | 340686 | 672692 | 27.0 | 22.0 | | | | | 16.0 | 20.0 | 19.0 | 24.0 | 29.0 | 29.0 | 23.3 | 17.5 | | |
| T12 | 340738 | 672687 | 21.0 | 16.0 | | | | | 14.0 | 22.0 | 19.0 | 21.0 | 22.0 | 25.0 | 20.0 | 15.1 | | |
| T13 | 340608 | 672738 | 25.0 | 21.0 | | | | | 15.0 | 19.0 | 18.0 | 19.0 | 16.0 | 31.0 | 20.5 | 15.4 | | |
| T14 | 340570 | 672780 | 14.0 | 13.0 | | | | | 10.0 | 19.0 | 12.0 | 17.0 | 16.0 | 20.0 | 15.1 | 11.4 | | |
| T15 | 340112 | 672905 | 17.0 | 18.0 | | | | | 9.0 | 13.0 | 13.0 | 14.0 | 18.0 | 17.0 | 14.9 | 11.2 | | |
| T16 | 352249 | 673631 | 7.0 | 6.0 | | | | | 3.0 | 4.0 | 5.0 | 9.0 | 7.0 | 9.0 | 6.3 | 4.7 | | |
| T23 | 333941 | 672837 | 19.0 | 6.0 | | | | | 10.0 | 14.0 | 16.0 | 15.0 | 18.0 | 19.0 | - | - | | Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only |
| T24 | 333941 | 672837 | 16.0 | 16.0 | | | | | 10.0 | 16.0 | 15.0 | 13.0 | 6.0 | 22.0 | - | - | | Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only |
| T25 | 333941 | 672837 | 20.0 | 18.0 | | | | | 10.0 | 14.0 | 17.0 | 16.0 | 19.0 | 23.0 | 15.3 | 11.6 | | Triplicate Site with T23, T24 and T25 - Annual data provided for T25 only |
| T26 | 336691 | 672055 | 20.0 | 15.0 | | | | | 12.0 | 19.0 | 18.0 | 20.0 | 21.0 | 24.0 | 18.6 | 14.0 | | |
| T27 | 336769 | 672127 | 2.0 | 3.0 | | | | | 10.0 | 16.0 | 15.0 | 17.0 | 21.0 | 25.0 | 13.6 | 10.3 | | |
| T28 | 334164 | 672708 | 18.0 | 12.0 | | | | | 11.0 | 17.0 | 18.0 | 18.0 | 19.0 | 21.0 | 16.8 | 12.6 | | |
| T29 | 334354 | 672643 | 26.0 | 24.0 | | | | | 21.0 | 27.0 | 27.0 | 27.0 | 24.0 | 26.0 | 25.3 | 19.0 | | |
| T30 | 334427 | 672664 | 24.0 | 21.0 | | | | | 13.0 | 17.0 | 20.0 | 22.0 | 22.0 | 20.0 | 19.9 | 15.0 | | |
| T31 | 334580 | 672713 | 30.0 | 24.0 | | | | | 23.0 | 24.0 | 25.0 | 23.0 | 25.0 | 24.0 | 24.8 | 18.6 | | |
| T32 | 334578 | 672695 | 47.0 | 66.0 | | | | | 15.0 | 41.0 | 19.0 | 42.0 | 28.0 | 30.0 | 36.0 | 27.1 | | |
| T33 | 351693 | 673998 | 20.0 | 18.0 | | | | | 12.0 | 13.0 | 13.0 | 16.0 | 20.0 | 7.0 | 14.9 | 11.2 | | |
| T34 | 351702 | 674034 | 11.0 | 11.0 | | | | | 7.0 | 10.0 | 12.0 | 10.0 | 13.0 | 14.0 | 11.0 | 8.3 | | |
| T35 | 355339 | 685307 | 27.0 | 20.0 | | | | | 6.0 | 7.0 | 8.0 | 8.0 | 12.0 | 11.0 | 12.4 | 9.3 | | |
| T36 | 355186 | 685277 | 10.0 | 9.0 | | | | | 6.0 | 9.0 | 8.0 | 10.0 | 12.0 | 9.0 | 9.1 | 6.9 | | |
| | | | | | | | | | | | | | | | | | | |

Appendix D: Maps of Monitoring Locations

Map of Automatic Monitoring Site in Musselburgh

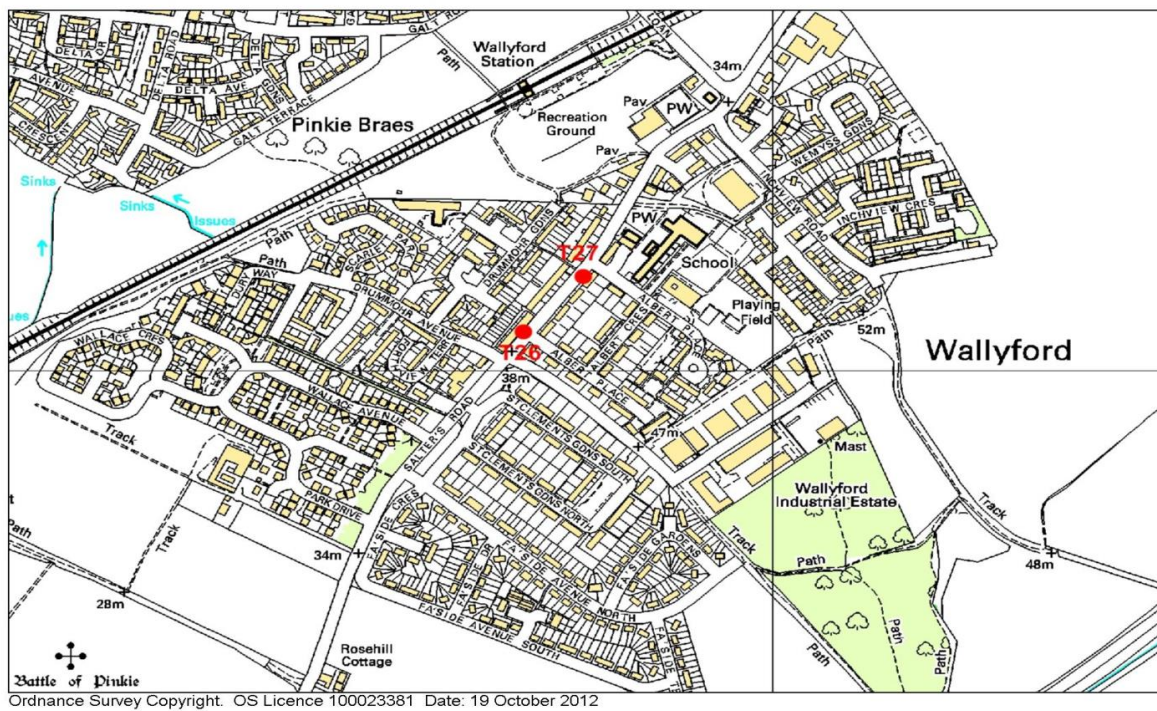


Map of Non-Automatic Monitoring Sites in Musselburgh

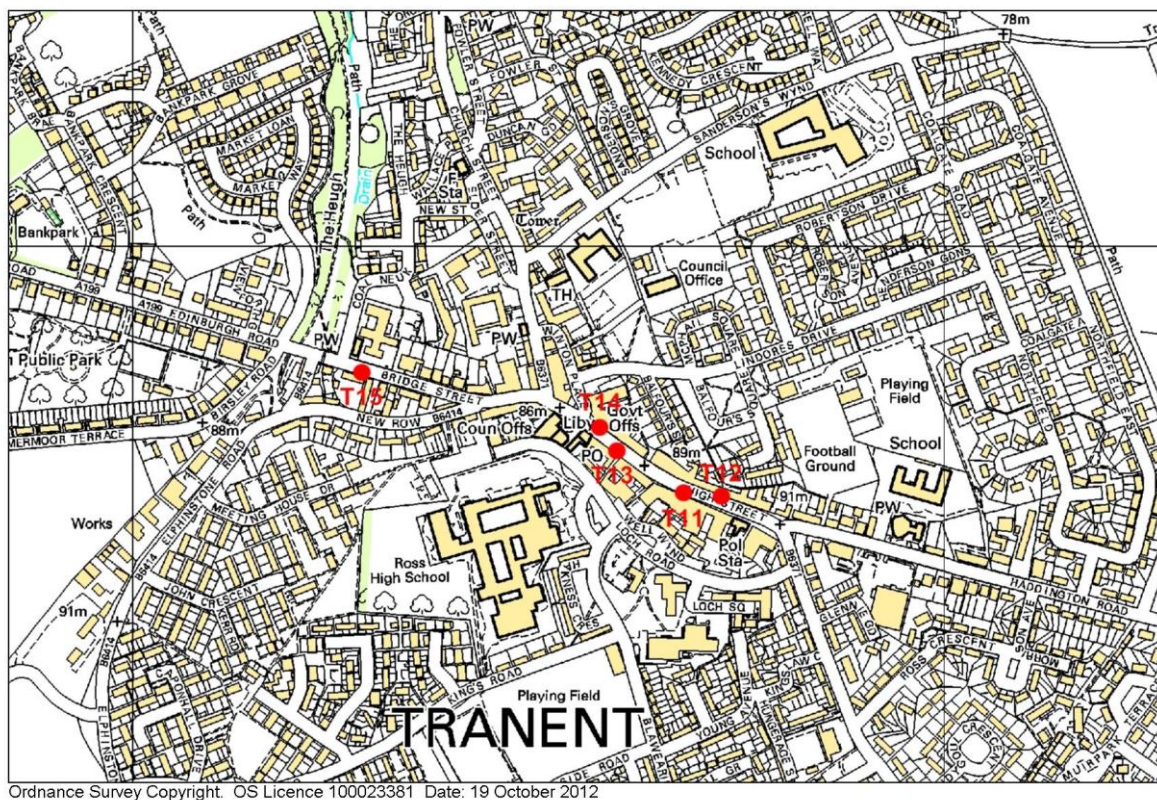


Ordnance Survey Copyright. OS Licence 100023381 Date: 19 October 2012

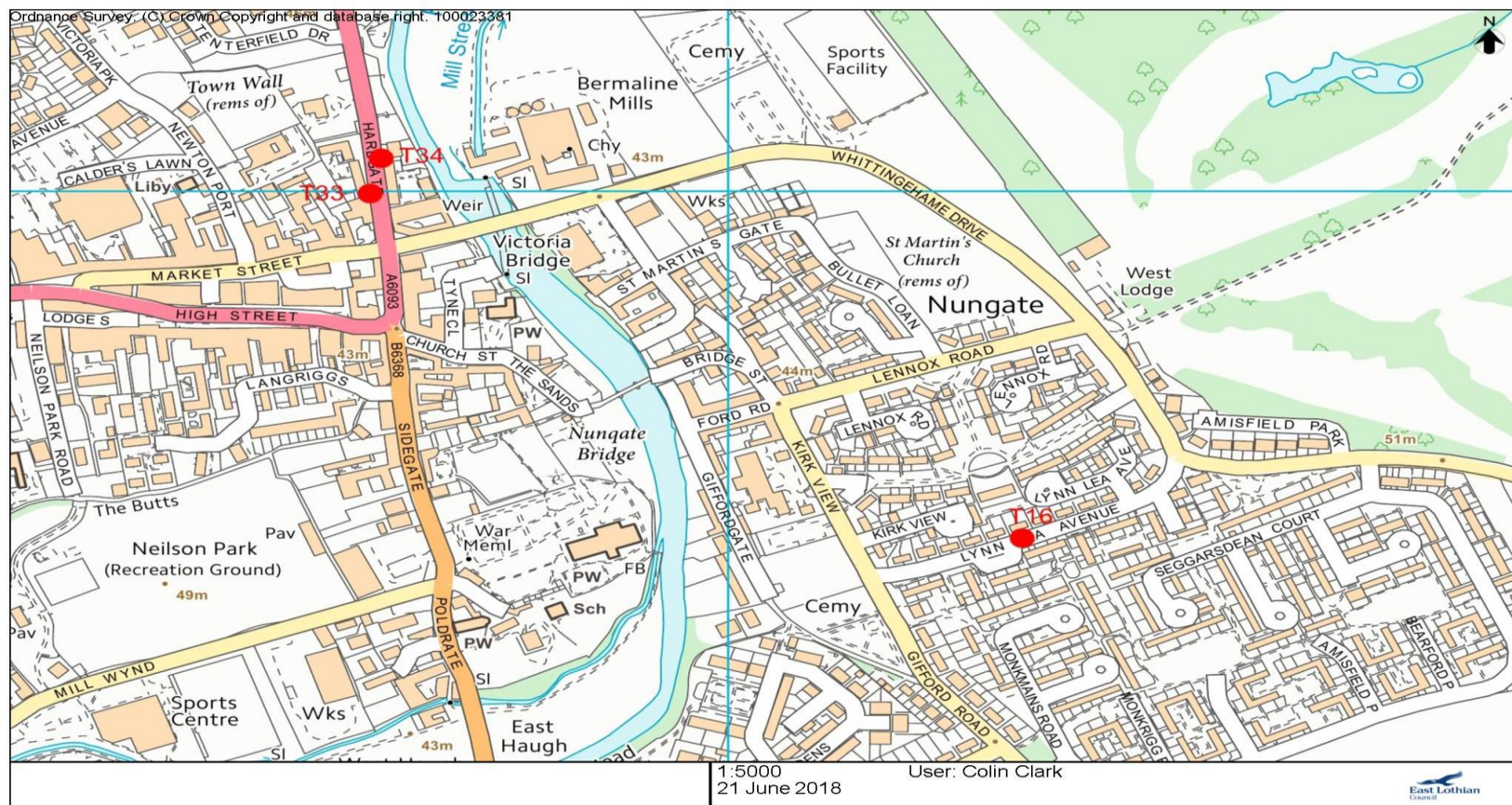
Map of Non-Automatic Monitoring Sites in Wallyford



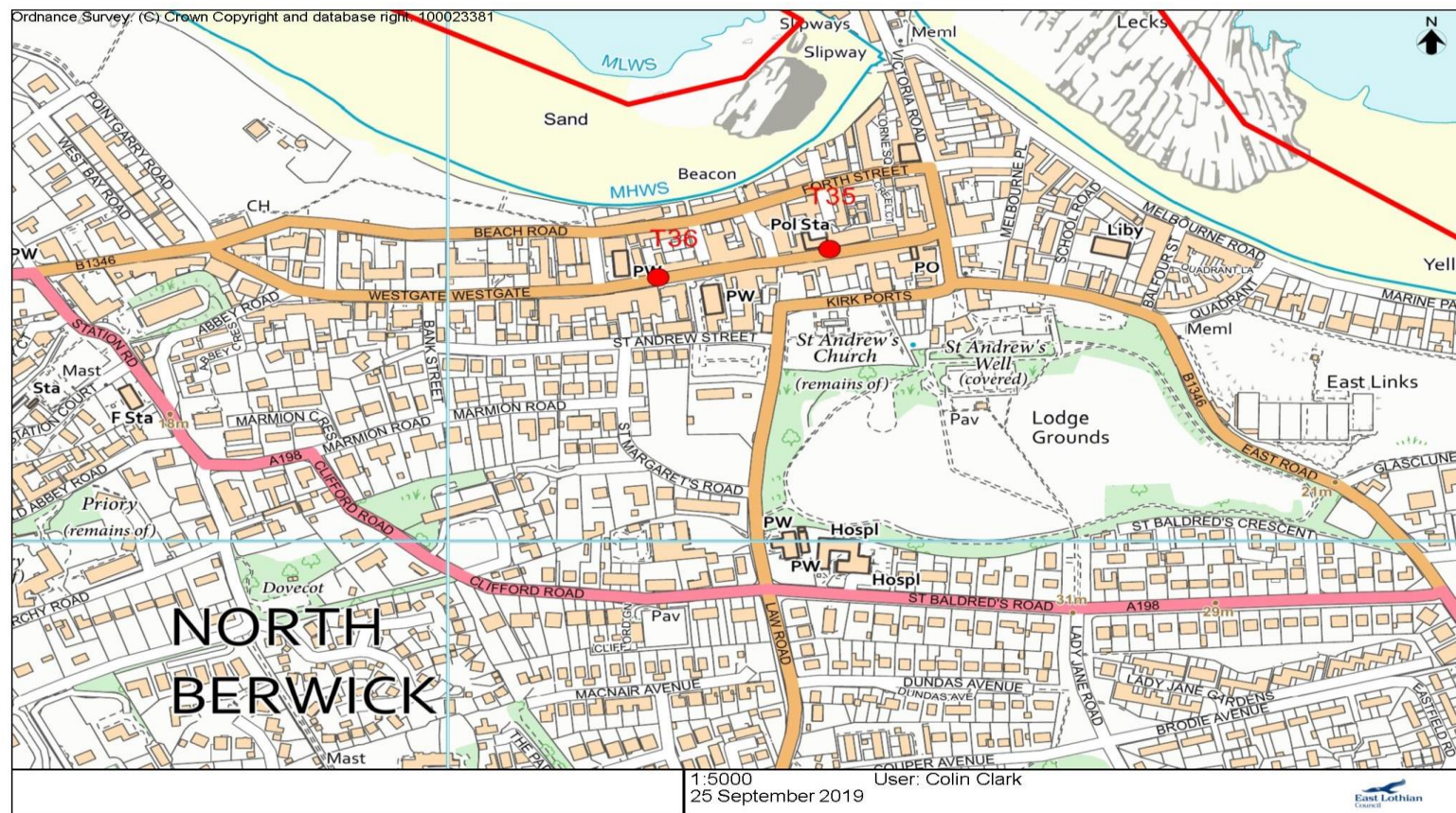
Map of Non-Automatic Monitoring Sites in Tranent



Map of Non-Automatic Monitoring Sites in Haddington



Map of Non-Automatic Monitoring Sites in North Berwick



Appendix E: Summary of Previous Rounds of Review and Assessment

| Summary of Previous Review and Assessment Reports | | | | |
|---|---------------------------------|-----------------|------------------------|---|
| ROUND | REPORT TYPE | REPORT DUE DATE | REPORT COMPLETION DATE | CONCLUSIONS |
| 2 | Updating & Screening Assessment | April 2003 | March 2004 | No further assessments required for Carbon Monoxide, Benzene, Lead and 1,3-Butadiene . Detailed Assessments required for: Nitrogen Dioxide due to road traffic sources in Musselburgh High St Sulphur Dioxide due to industrial sources (Cockenzie Power Station and Lafarge Cement Works) PM10 due to road traffic sources in Musselburgh High St and North High St and also due to industrial source (Cockenzie Power Station) |
| 2-1 | Detailed Assessment | April 2004 | April 2005 | Nitrogen Dioxide due to road traffic in Musselburgh High St expected to meet Objectives by target year of 2005. No Further Assessment required at this time. Sulphur Dioxide in vicinity of Cockenzie Power Station was not forecast to exceed Objectives. 15-minute mean Objective forecast to be slightly exceeded in vicinity of Lafarge Cement Works, although abatement equipment to be installed should ensure that Objective will be met. No further assessments required at this time. PM10 Annual Mean Objective forecast to be exceeded in Musselburgh High St due to roadwork's and Cockenzie due to emissions from Coal Plant at Cockenzie Power Station. However, results were based on Osiris monitoring system and use of correction factors. Further Assessments to be carried out by East Lothian Council using TEOM Analyser for road traffic sources in Musselburgh and by SEPA using Gravimetric Sampler for industrial source in Cockenzie. |
| 2-2 | Progress Report | April 2005 | August 2005 | Nitrogen Dioxide levels due to road traffic sources continue to comply with Objectives within Musselburgh and throughout East Lothian. PM10 Further Assessments due to road traffic sources in Musselburgh and industrial source in Cockenzie still to be completed and results to be incorporated in Updating and Screening Assessment Report due in April 2006. |
| 3 | Updating & Screening Assessment | April 2006 | August 2006 | No exceedences of any Objectives forecast. No Further Assessments required |
| 3-1 | Progress Report | April 2007 | July 2007 | Nitrogen Dioxide levels due to road traffic sources in Musselburgh and proposed expansions of Musselburgh Racecourse and Wallyford Village continue, and are forecast, to comply with Objectives. PM10 levels due to road traffic in Musselburgh complied with using local correction factor but exceeded using national correction factor. TEOM unit to be replaced with a BAM unit following results of Equivalence Study carried out by DEFRA. |
| 3-2 | Progress Report | April 2008 | February 2009 | Nitrogen Dioxide levels due to road traffic sources in Musselburgh and proposed expansions of Musselburgh Racecourse and Wallyford Village continue, and are forecast, to comply with Objectives. Passive monitoring to be introduced in Wallyford. |

| Summary of Previous Review and Assessment Reports | | | | |
|---|--|-----------------|------------------------|--|
| Round | Report Type | Report Due Date | Report Completion Date | Conclusions |
| 4 | Updating & Screening Assessment | April 2009 | November 2009 | PM10 and Nitrogen Dioxide levels in Musselburgh will require to be subject of a Detailed Assessment due to the Biomass Unit located at Queen Margaret University. The results of the Updating and Screening Assessment carried out for all other pollutants indicates that current Air Quality Objectives are being complied with. |
| 4-1.1 | Detailed Assessment of Nitrogen Dioxide and PM10 due to QMU Biomass Unit | 2010 | October 2010 | PM10 and Nitrogen Dioxide levels continue to be met |
| 4-1 | Progress Report | April 2010 | October 2010 | All AQO's being complied with |
| 4-2 | Progress Report | April 2011 | June 2011 | Detailed Assessment of Nitrogen Dioxide required for Musselburgh High Street. All other AQO's being complied with. |
| 4-2.1 | Detailed Assessment of Nitrogen Dioxide in Musselburgh due to Road Traffic | 2012 | May 2012 | AQMA required for Bridge Street and High Street due to forecast exceedance of Annual Mean AQO if additional monitoring confirms predicted exceedences. |
| 5 | Updating & Screening Assessment | April 2012 | | AQMA required for Bridge Street and High Street due to forecast exceedance of Annual Mean AQO <u>if additional monitoring confirms predicted exceedences in 2012.</u> |
| 5-1 | Progress Report | April 2013 | August 2013 | AQMA to be declared in Musselburgh in relation to exceedences of NO2 Annual Mean Objective. Further Assessment to be commissioned. |
| 5-1.1 | Further assessment | November 2014 | June 2014 | It is estimated that ambient NOx reductions in the AQMA of between 0% and 27% are required in order to achieve compliance with the annual mean NO2 objective. The source apportionment exercise indicates that emissions from buses form the largest contribution at all locations along the High St AQMA. Modelling of the mitigation scenarios agreed with the Council indicates that an integrated package of interventions would provide the best NOx reductions. Measures that reduce overall traffic, reduce queuing and reduce bus numbers, where appropriate, will reduce road NOx significantly. |
| 5-2 | Progress Report | April 2014 | August 2014 | Monitoring results for 2013, indicate that the current AQMA boundary includes all relevant sources and does not require revocation or amendment at this time. NO ₂ levels in AQMA continue to exceed or remain very close to objective. |
| 6-1 | Updating & Screening Assessment | April 2015 | September 2015 | Monitoring results for 2014, indicate that the current AQMA boundary includes all relevant sources and does not require revocation or amendment at this time. NO ₂ levels in AQMA continue to exceed or remain very close to objective. Progress is being made wrt development of Action Plan with draft expected early 2016. |
| 6-2 | Annual Progress Report | June 2016 | July 2016 | No exceedances of Air Quality Objectives with downward trend noted in NO ₂ . Action Plan being progressed. Awaiting results of Micro-simulation traffic model to allow traffic-related mitigation measures to be identified for inclusion in Action Plan. |
| 6-3 | Annual Progress Report | June 2017 | July 2017 | Exceedances of NO2 Annual Mean recorded at T6 and T31. |
| 6-4 | Annual Progress Report | June 2018 | June 2018 | No exceedances of any Air Quality Objectives |

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|-----|------------------------|-----------|-----------|--|
| 6-5 | Annual Progress Report | June 2019 | June 2019 | No-exceedances of any Air Quality Objectives |
| 6-6 | Annual Progress Report | June 2020 | June 2020 | No exceedances of any Air Quality Objectives |
| 6-7 | Annual Progress Report | June 2021 | June 2021 | No exceedances of any Air Quality Objectives. ELC to proceed to a Detailed Assessment of air quality within the AQMA. If future exceedances are deemed unlikely then AQMA to be revoked. |

Glossary of Terms

| Abbreviation | Description |
|-------------------|---|
| AQAP | Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values' |
| AQMA | Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives |
| APR | Air quality Annual Progress Report |
| AURN | Automatic Urban and Rural Network (UK air quality monitoring network) |
| Defra | Department for Environment, Food and Rural Affairs |
| DMRB | Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England |
| FDMS | Filter Dynamics Measurement System |
| LAQM | Local Air Quality Management |
| NO ₂ | Nitrogen Dioxide |
| NO _x | Nitrogen Oxides |
| PM ₁₀ | Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less |
| PM _{2.5} | Airborne particulate matter with an aerodynamic diameter of 2.5µm or less |
| QA/QC | Quality Assurance and Quality Control |
| SO ₂ | Sulphur Dioxide |

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